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**MONTHLY INCOME PAYMENTS
IN THE UNITED STATES
1929-40**

REFERENCE ROOM
BUREAU OF ECONOMIC ANALYSIS
BE-15 TOWER BUILDING
1401 K ST., N.W.
WASHINGTON, D.C. 20230

**U. S. DEPARTMENT OF COMMERCE
BUREAU OF FOREIGN AND DOMESTIC COMMERCE**

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U. S. DEPARTMENT OF COMMERCE

Harry L. Hopkins, *Secretary*

BUREAU OF FOREIGN AND DOMESTIC COMMERCE

James W. Young, *Director*

+

Economic Series No. 6

**MONTHLY INCOME PAYMENTS
IN THE UNITED STATES
1929-40**

BY

FREDERICK M. CONE

National Income Division



REFERENCE ROOM
BUREAU OF ECONOMIC ANALYSIS
BE-16 TOWER BUILDING
1401 K ST., N.W.
WASHINGTON, D.C. 20230

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CONTENTS

Foreword.....	Page iv
Introduction.....	1

CHAPTER I

Concepts and scope of the estimates.....	3
National income and income payments.....	3
Salaries and wages.....	4
Dividends and interest.....	5
Entrepreneurial income.....	5
Net rents and royalties.....	6
Direct relief, gifts, and inheritances.....	6
Other labor income.....	7
Other forms of income.....	8

CHAPTER II

Interpretation and use of the estimates.....	11
Income payments and consumer purchasing power.....	12
Income payments as an index of general economic activity.....	16
Appendix.—Sources and methods.....	27

TABLES

1. National income and income payments by years, 1929-38.....	19
2. Income payments by months, 1929-40.....	22

CHARTS

1. Income payments and department-store sales.....	15
2. Income payments and commodity production.....	18
3. Indexes of salaries and wages by major industrial groups.....	21
4. Income payments and bank debits.....	21
5. Methods of adjusting monthly data to annual averages.....	28

FOREWORD

This bulletin is another in a series of publications prepared by the Department of Commerce on the subject of income in the United States. The Department's annual estimates of the national income, which provide break-downs by industrial sources and by types of payment, have proved widely useful and have stimulated a rapidly growing interest in the measurement of our income. In addition, the Department's annual estimates of the flow of income to individuals in each of the various States have been extensively used in the business community as well as among research workers and Government officials.

The annual figures, while valuable and essential for many purposes, are not sufficiently current to provide a measure of short-term changes in the economic activity of the Nation as evidenced by the flow of income to individuals. To meet this need, the Department first published estimates of monthly income payments early in 1938. This series, extending back to January 1929, has been revised and brought up to date. It is published each month in the Survey of Current Business and provides a measure of month-to-month changes in the aggregate income flow to individuals and a break-down by types of income payments. This series is particularly useful as an indicator of changes in general business activity and is helpful to business in providing a measure approximating the purchasing power of consumers.

This bulletin is published for the purpose of describing in detail the sources and methods underlying the estimates and discussing the various uses and limitations which should guide those who use the statistics. The estimates and the bulletin have been prepared in the National Income Division of the Bureau of Foreign and Domestic Commerce. This work is under the supervision of E. A. Tupper, Chief Statistician of the Bureau of Foreign and Domestic Commerce, and under the general direction of Robert R. Nathan, Chief of the National Income Division. Frederick M. Cone has been primarily responsible for the development of methods and techniques employed in the preparation of the figures.

JAMES W. YOUNG, *Director,*
Bureau of Foreign and Domestic Commerce.

AUGUST 1940.

MONTHLY INCOME PAYMENTS IN THE UNITED STATES, 1929-40

INTRODUCTION

Early in 1933 the Department of Commerce published its first estimates of monthly income in the United States. Since that time a number of changes in the content of the series and in the methods of estimation have been made. Further revisions of equal importance¹ may be undertaken in the future as new source material becomes available and as the application of the series to the purposes it is intended to serve reveals its adequacies for those purposes. It is believed, however, that the concept of income payments and the sources and methods involved in its measurement have become sufficiently crystallized to render advisable a more comprehensive description of the series at this time.

For those who have been using the monthly series since its original publication² it may be useful to indicate briefly the major revisions which have subsequently been made, before proceeding to describe the estimates as they now stand. The original series represented an outgrowth of the Department's annual estimates of the national income and was prepared largely in response to a demand for a measure of current changes in the Nation's income. Since it was not feasible to construct a satisfactory index of current changes in the item of business savings, the objective at that time was limited to a breakdown by months of what has been termed "income paid out" in the annual estimates. This is a measure of the total compensation disbursed by business enterprises for services rendered by individuals. The sum of income paid out and business savings comprises the national income.³

It soon became apparent, however, that current changes in income disbursed by business enterprises were likely to be misleading as an indication of movements in the net value of goods and services produced, because of the marked quarterly changes in the residual item of business savings. Also, it appeared that the series would probably find its most important application as an indicator of changes in the current purchasing power of consumers. Therefore, in correcting the monthly series to accord with the revised annual income estimates

¹ Owing to the comprehensive nature of income aggregates, new information is constantly coming to hand which makes advisable the revision of many individual components. Despite the frequent appearance of such additional source materials, revisions in the income aggregates have in the past been of a moderate character. Thus, since its original publication in 1934 the Department's estimate of the national income for 1929 has varied from \$9.8 to \$2.0 billion dollars—i. e., within a range of less than 2 percent. The estimated trend in national income has been confined to much narrower limits. Thus, in all the various revisions the year 1933 expressed as a percentage of 1929 has varied only from 51.5 to 52.1.

² "Monthly Income Payments in the United States," February 1936 issue of the Survey of Current Business.

³ For an extended discussion of the concepts and scope of the national-income estimates, the reader is referred to chapters 1 and 2 of *National Income in the United States, 1929-35*.

from 1929 to 1937, inclusive, it was considered advisable to depart from the concept of income paid out and to construct a series that would more closely represent the actual payment of income to individuals. A brief description of the revised series was published in the October 1938 issue of the Survey of Current Business.⁴ The estimated volume of income payments was later raised somewhat for the whole period as a result of revisions in the annual figures,⁵ but the concept of income payments as a measure of the flow of consumer purchasing power is essentially that which was briefly described in the October 1938 issue of the Survey of Current Business.

⁴ "Revised Estimates of Monthly Income Payments in the United States, 1929-38."

⁵ "National Income in 1938 at \$4 Billion Dollars," June 1939 issue of the Survey of Current Business.

CHAPTER I

CONCEPTS AND SCOPE OF THE ESTIMATES

In recent years national-income estimates have been applied to a variety of uses, only two of which are noted here. The national income proper continues to be generally accepted as the most comprehensive index of the product of the Nation's economic activity and of its economic welfare. More recently, however, the violent cyclical movements of the past 10 years have concentrated attention upon the purchasing-power aspect of the national-income aggregate. The national income is a measure of the net value of the Nation's economic output and at the same time a measure of the command over this output. It is the demand or purchasing-power aspect of the national income which has assumed increasing importance in recent years. Its segments have considerable usefulness as measures of fluctuations in consumer purchasing power, and as determinants of such important variables as savings, investment, and consumption. In this connection, two important changes in method are demanded. In the first place, it is immediately evident that the year, which is the unit of time forced upon the national-income estimator by prevailing accounting procedure, is too large a unit for the analysis of short-term fluctuations or for the determination of current business and governmental policy. Secondly, some of the value judgments that complicate the work of the national-income estimator are not relevant to the purposes noted above. In particular, the effect of a given amount of personal income upon consumer purchasing as a whole must be conceived of as being independent of whether or not this income represents a reward for a service rendered.

In the analysis of cyclical fluctuations, interest ultimately attaches to the flow of funds from industry and Government to the consumer and his disposal of these funds, which in turn constitutes a demand for consumable goods and services and for capital goods. For the most part, however, consumers acquire a command over goods only in return for definite services which they currently render in the production of these or other goods. Therefore, the present monthly series on income payments in the United States is, as already noted, closely related to the Department's estimates of the national income, and for this reason and also because the latter figures are comparatively well known to the general public, it will be useful, in describing the content of the series, to relate the treatment of its several items, wherever possible, to the treatment of the same or comparable items in the national income as estimated by the Department of Commerce.

NATIONAL INCOME AND INCOME PAYMENTS

In the annual income reports of the Bureau of Foreign and Domestic Commerce, national income is defined as the net value of all commodities produced and all services rendered within the United States.

The significance of the concept has been developed at some length in the various publications¹ of the Bureau on this subject, and it is not necessary to enlarge upon the concept here, except as it incidentally enters into the description of the monthly series.

In any given year the business enterprises producing the commodities and services that make up the national income may not pay out to the individuals contributing to their activities exactly the value of the year's net product. In some years business units increase their net worth by retaining a share of their net product. These undistributed earnings are termed positive business savings. In other years the relative inelasticity of business costs with respect to business income forces business units to sustain their payments to individuals by drafts upon business capital and surplus. This excess of income disbursed over the value of product is called negative business savings.

The share of the national product distributed to individuals each year includes the salaries, wages, dividends, interest, and rents and royalties disbursed by business enterprises in return for the personal services or capital which individuals have contributed to the process of production, in addition to what individual entrepreneurs take either in cash or in kind from their business for their own personal expenditures. This aggregate has been defined in earlier studies as "income paid out." Until recently, the aggregate disbursements of income to the agents of production (income paid out) might well have been taken as representative of the flow of purchasing power to individuals considered as ultimate consumers. The severe economic distress of the past 10 years has, however, occasioned several important changes in public fiscal policy, which have served to negate the identity between the distributed portion of the national income and consumer purchasing power and to make desirable a separate series measuring the latter quantity. The character of these changes will be evident in the discussion of the separate items included in income payments.

SALARIES AND WAGES

Salaries and wages included in income payments are identical with those included in the national-income estimates, save for one important exception. Since 1936 national income includes, along with the compensation received directly by the employee, also that portion of his wage or salary which he contributes to the Social Security programs, as well as the Social Security contribution of his employer to the employee's account. It is reasoned that such contributions represent on the one hand a labor cost to the employer, and on the other a share in the net product which accrues to the employee's account though not immediately available to him. Such contributions are excluded from income payments because they are definitely not at the employee's immediate disposal. On the other hand, employee benefits are included in income payments (cf. "Other labor income," below).

Income in kind is included in salaries and wages in both series for those industries in which this type of income is of importance. The inclusion of this nonmonetary type of income in a series designed to represent the flow of funds or purchasing power to consumers may

¹ Cf. especially: *National Income, 1929-32*; *National Income in the United States, 1929-35*; and *Income in the United States, 1929-37*.

seem questionable at first sight, but payments in kind constitute an effective command over consumer's goods, though this command is exercised by the employer rather than the employee. Payments in kind constitute about 2 percent of total salaries and wages but are particularly important in certain industries, notably agriculture, domestic service, water transportation, and in the military and naval services of the Federal Government.

DIVIDENDS AND INTEREST

In national-income estimates, institutional investors, such as banks and insurance companies, are considered to be aggregates of individuals, on the ground that dividends and interest received by such institutions represent accruals to the credit of individual depositors or policyholders. Consistently with this procedure, the distributive shares in the national product do not include funds which individuals actually receive, in the form of interest, from these institutional savings organizations. This treatment, not an entirely satisfactory one, is necessitated by the consideration that it is at present impossible to determine what proportion of withdrawals by investors from such institutions represents the interest on invested capital and what proportion represents the return of their principal. This deficiency is particularly important in the case of income payments because the individual consumer cannot be considered to exercise immediate command over the current investment income accruing to his account. On the other hand, the individual can, and frequently does, withdraw all or part of his capital, including the accrued interest thereon, from the institution. Therefore, one possible solution for this problem might be the deduction from total income payments as now measured of all interest income of such institutions as well as the net of consumer deposits over withdrawals from such institutions. Such a procedure would be tantamount to isolating the demand for a certain type of goods, e. g., bank balances, and calculating the residual purchasing power for all other goods and services. It seems likely that this is the direction that the statistical analysis of cyclical fluctuations will ultimately take, but for the present the inclusion of such capital transfers would involve a radical departure from the concept of income and would lead to an analysis of the disposal as against the mere receipt of consumer income.

ENTREPRENEURIAL INCOME

Entrepreneurial income, as included in income payments, comprises the net income of farm operators and independent professional men and the computed withdrawals of independent businessmen in other lines of enterprise. Because the fields of agriculture and professional service account for more than one-half of total entrepreneurial income, the aggregate is known by this more familiar term rather than as entrepreneurial withdrawals. The withdrawal of an entrepreneur is defined as that portion of his business receipts that he withdraws from his enterprise for personal or nonbusiness uses. It is obvious that this concept of an entrepreneurial withdrawal is the proper one for inclusion in a measure of consumer purchasing power, but there is great difficulty in determining the actual volume of such withdrawals, particularly in agriculture and professional

service, in which fields no distinction is here drawn between an entrepreneur's net income and his withdrawal for nonbusiness uses. In the field of professional service, capital requirements are in general so limited as to render unimportant the distinction between the entrepreneur's personal savings and his business savings. In agriculture, it has been found impossible to make a satisfactory estimate of entrepreneurial withdrawals. Furthermore, the limited information now at hand indicates that farm purchasing varies substantially with the net income of farm operators. Therefore, pending further studies on this subject, agricultural net income has been included in income payments.

NET RENTS AND ROYALTIES

Net rents and royalties are included in the national-income aggregate as an independent type of income, but for lack of space are shown in combination with entrepreneurial income in the monthly series. They may be defined as gross rents and royalties less expenses, depreciation, and depletion. Interest payments in this connection are classified as expenses inasmuch as they appear elsewhere as a type of income. In fact, net rents as thus computed represent to a considerable degree interest return on the equity of the owner or operator, and on that account might well have been combined with dividends and interest into an aggregate of property income. However, net rents include an element of return for the efforts of the owner and operator, and are, therefore, classified with entrepreneurial income, which is likewise a combination of interest income and labor income.

DIRECT RELIEF, GIFTS, AND INHERITANCES

Direct relief, gifts, and inheritances are all excluded from national income estimates on the ground that, although they constitute in many cases a substantial component of personal income, such receipts are more in the nature of income transfers than rewards for services rendered in the productive process, and therefore represent no addition to the income of society. Likewise, gifts and inheritances are excluded from income payments because such additions to the income of the recipient are considered to be simultaneously counterbalanced by an equal deduction from the income (or wealth) of the giver or from the wealth of the deceased. It is obvious, however, that such transfers of income or wealth have a very marked influence upon the distribution of individual income and consequently upon the disposition of available purchasing power as between different types of consumer's and capital goods, if not upon the volume of such purchasing power.

Direct relief, as disbursed by governmental agencies, is not, however, excluded from income payments, since such relief is not immediately offset by a like reduction in the income (or claim over income) of the nonrelief portion of the population if the Government finances relief by borrowing. In such a case the purchase of Government obligations must be considered as entailing the same sort of decision as any other act of individual investment, and, therefore, the inauguration of a direct-relief program does actually increase the volume of funds at the disposal of ultimate consumers. Of course, it is not in general possible to say which functions of government are operated on the basis of current tax receipts and which are operated on borrowed

funds, but for the period during which direct relief has been of importance, there have been only isolated attempts to earmark tax receipts for relief purposes, whereas the flotation of bonds for such purposes has been a common occurrence throughout the period. The Federal Government in particular has been financing a considerable portion of its expenditures on borrowed funds during these years. For these reasons all governmental expenditures on relief¹ are included in the monthly series. It should be noted, however, that the whole problem of the effect of taxes upon the disposition of consumer income is a complicated one, and certain aspects of this question will be noted in another part of this bulletin.

The treatment outlined above refers to transfers of income among individuals or from governments to individuals. In the case of contributions to charity by business units, a somewhat different treatment is required. Under prevailing legislation, business units are permitted to enter such items as deductible costs, and since national-income estimates lean heavily on corporation income-tax data, the reporting of such contributions as a cost and their exclusion from the estimates of national income in effect understates the computed national income total by that amount. At the present time there is not sufficient information available to permit a correction for this bias. Consequently, such contributions are included in neither the national income nor the monthly series on income payments. Such additions to personal income by business units, while substantial in absolute amount, represent but a fraction of the volume of direct relief or income transfers between individuals.

OTHER LABOR INCOME

Other labor income comprises industrial pensions, industrial compensation for injuries, and veterans' benefits of various types, in addition to social-insurance benefits under the terms of the Social Security Act, the treatment of which has already been indicated in the earlier discussion of salaries and wages. Income of this type differs from direct relief, which is awarded on the basis of needs, in that it represents a return for services rendered at some time or another; it differs from salaries and wages in that the reward is separated in time from the service which it represents and is, therefore, only indirectly related to the current level of economic activity. This type of income in reality comprises two distinct types, each of which requires separate discussion.

1. Industrial pensions and compensation for injuries are included in national income as well as in the monthly series. The ideal treatment for this type of income would be that which is applied to the fiscal operations of the Social Security Act, namely, the inclusion in the national income of the employee's full wage and the employer's contribution to such funds for the period during which the employer or employee makes his contribution to the appropriate fund, and the inclusion of employee benefits in income payments for the period during which the employee receives them. Actually there is not sufficient information to permit this procedure; in many cases the employer is the only contributor, the plan is on a pay-as-you-go basis, and benefits

¹ As in computing the national income, work-relief wages are included with other salaries and wages on the ground that the value of work projects is commensurate with the cost of the projects, as with other functions of government.

are reported as a current expense. For these reasons the actual benefits are included in both national income and income payments for the period during which they are received.

It will be noted that no provision has been made in the construction of the monthly series for individual annuity and accident insurance policies, although the monetary consequences of such policies are very much like those of the industry- or Government-sponsored plans that are taken into account, namely, the increase in the demand for investment opportunities relative to consumption that occurs while the insurance funds are being built up and the shift in demand while they are being depleted. Private insurance and annuity policies should, however, be considered as among the many goods that compete for the consumer's dollar, whereas he has no choice as to the disposal of a portion of his income when the insurance plan is a matter of legislation or of company policy.

2. Federal pensions and compensation to war veterans have, over the period as a whole, averaged more than \$400,000,000 per year and, prior to the inauguration of social-insurance benefits in recent years, constituted the largest single component of "Other labor income." In addition to its regular pensions to veterans, the Federal Government since 1931 has disbursed nearly \$3,000,000,000 to the veterans of the World War in consideration of their services during that period. Both types of veterans' benefits are excluded from the Bureau's national-income estimates on the ground that the services for which such payments are designed to compensate were rendered before the period covered by the Bureau's figures, but both are included in the monthly series as constituting an important addition to consumer purchasing power, especially in the years 1931 and 1938. Prior to June 1938 payments to World War veterans took the form of cash loans on the security of their adjusted service certificates; in that month the Federal Government, in discharge of its obligations on account of adjusted service legislation, remitted to the veterans more than \$2,000,000,000 worth of adjusted service bonds and some cash. The larger portion of these bonds were liquidated during the year 1936, but the Treasury has been redeeming them in smaller amounts during the past 3 years; the present rate is about \$2,000,000 a month. More properly, then, the payments to veterans represent in the first instance loans on existing assets and in the second the gradual liquidation of these assets rather than the actual payment of income as here defined. Nevertheless, because these disbursements of the Federal Government were in the nature of original receipts to the veterans and because, owing to the large volume of the disbursements and their wide distribution among 3,000,000 veterans, they represented an important stimulus to consumption on two distinct occasions, they have been incorporated into the monthly series. The treatment illustrates the difficulty of distinguishing at times between capital movements and income flow in the analysis of consumer purchasing.

OTHER FORMS OF INCOME

There are various other minor types of personal income which are not included either in the Bureau's national-income estimates or in the monthly series of income payments.

Realized gains or losses from the sale of assets are not included in national-income estimates because they are strictly price phenomena

and in no sense measure net value of product in a given period. This type of income is likewise excluded from income payments but on somewhat different grounds. It is assumed that the transfer of a capital asset makes no contribution to mass purchasing power, since the increase in funds available to the seller is simultaneously offset by the immobilization of an equal volume of the purchaser's current income.⁴ Capital gains do, however, exert important influences upon the distribution of current purchasing power and consequently upon its disposal among different goods and commodities. In particular, it is suspected that income arising from a realized gain on capital transactions is subjected to quite different treatment in its disposition than is income of a more regular nature. But this consideration is only one of many psychological influences that indirectly affect the direction of business activity and for this reason is not involved in the present discussion.

Earnings from odd jobs or from illegal activities are excluded from both series, the former because of insufficient data, the latter because such activities are considered as being of no economic value within the legal framework of the producing economy. The exclusion of these two items from the income-payments series cannot be considered as seriously impairing its usefulness. If such exclusion results in an understatement of the dollar volume of consumer demand, this understatement is offset by the exclusion of the same items from the supply of goods and services (national income). In fact, for purposes of comparison it is desirable that a consistent procedure be observed for such items.

Imputed income from the ownership of durable consumers' goods is excluded from the income-payment series as representing no addition to consumer purchasing power. This type of income is, however, included in many estimates of the national income by nongovernmental agencies, and it is likely that future studies by this Bureau may adopt this procedure. In that event there will be a further important difference between national income and income payments.

The accompanying table indicates the magnitude of many of the items of which the treatment has been discussed above. Several minor items have been grouped together in order to shorten the table. These minor components include the effects of the Federal civil-service retirement operations, State allowances to war veterans, and some smaller items subjected to different treatment in constructing the two aggregates.

⁴ This offset is not strictly true in a period of generally rising prices when capital appreciation is supported by an increase in the volume of credit. For such a situation the volume of new credit is a more adequate measure of the increase in consumer buying than the aggregate of capital gains as such.

Table 1.—National Income and Income Payments by Years, 1929-36

Item	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
National income ¹	92,865	98,902	54,310	49,074	52,440	60,204	55,693	64,732	70,925	63,450	69,288
Less business savings ²	1,339	-3,023	-7,490	-8,317	-2,246	-3,407	-1,990	-791	-803	-2,384	-264
Distributive shares.....	91,526	95,924	61,800	40,757	54,686	63,711	57,593	65,543	71,728	65,733	69,022
Other deductions:											
Social Security contributions of employees.....											
Social Security contributions of employers.....											
Contributions to Railroad Retirement Fund.....											
Contributions to retirement systems for governmental employees.....											
Additions:											
Direct relief.....	131	140	149	160	167	190	193	205	215	223	234
Federal pensions to veterans.....	60	94	108	239	590	838	1,049	673	937	1,006	1,067
Adjusted services benefits.....	421	415	426	546	481	513	505	568	598	609	622
Other governmental retirement allowances.....			907	147	54	59	79	1,427	198	57	34
Unemployment compensation.....	169	191	241	237	246	271	283	298	319	266	278
Railroad retirement benefits.....											
Old-age insurance benefits.....											
Income payments.....	92,094	74,834	63,463	49,219	46,930	54,086	56,809	67,846	71,753	66,342	70,094

¹ National income figures differ slightly from those published in the June 1940 Survey of Current Business. The national incomes totals for the years 1933 to 1939 have been significantly revised owing to important revisions in estimated work-relief wages which were made subsequent to the publication of the national-income estimates for 1939. See notes.

² Exclusive of business savings in agriculture.

CHAPTER II

INTERPRETATION AND USE OF THE ESTIMATES

In the preceding chapter the content of the monthly series has been described at some length. The mere enumeration of the various items included in the series will have served to acquaint the reader with its general nature and to indicate its possible uses. However, it seems advisable to describe more fully the income-payments concept, even at the risk of some repetition, and to define at some length the limitations attaching to its use.

Although intended primarily as a measure of consumer purchasing power, the monthly series is readily applicable to a number of other uses. Among these, particular attention will be devoted to the use of the series as an index of general business activity. For each of these uses it may ultimately be desirable that a distinct measure of the monthly fluctuations in income be computed and published. For the present, however, it seems likely that the multiplication of income series would merely result in greater confusion, and it seems preferable to publish a single series, while noting briefly such adjustments as are desirable in each instance. Moreover, the breakdown of the present series is presented with these various applications in mind. Thus, the presentation of income payments by type of payment is intended to be indicative in a very rough way of the distribution of current income by size of income, which, as well as the volume of income, is a very important factor in determining the direction of consumer demand. It is well known that direct relief and unemployment benefits are subject to different disposal than dividends and interest, which are for the most part currently received by institutional investors or persons enjoying a high level of income. However, this type of analysis is at present limited by the wide variation in the average income from the important item of salaries and wages, even within each industry group. On the other hand, the break-down of labor income by industrial groups is designed to serve as an imperfect measure of the contribution of the various industrial segments of the economy to current economic activity. Similarly, the index of nonagricultural income payments is presented primarily to provide a measure of general economic activity that shall exclude the current contribution of agriculture, and secondarily as a measure of the monthly purchasing power of the nonfarm segments of the population.

The remainder of this chapter will be devoted to a discussion of the two important applications of the series noted above, with special attention to its use as an index of changes in consumer purchasing power. As in the previous chapter, it will be convenient to start with the better-known concept of national income.

In the estimation and analysis of the national income, it has been found useful to distinguish between the business enterprises that con-

duct the Nation's economic activity and the individuals whose services make that activity possible. The concept of a business enterprise in this connection includes not only business units in the narrow sense but also such enterprises as governmental bodies, farms, private hospitals, trade associations, and independent professional practices. The year-to-year output of the Nation's business enterprises is defined as the national income. In return for their assistance in the productive process, business enterprises disburse to individuals their share in the monetary value of the year's output. Individuals must, however, be considered not only as the ultimate agents of production but also as the ultimate end of production and their distributive shares in the national product as the payments by means of which business enterprises enable individuals to consume the output of the economy. Hence arises the notion of consumer purchasing power and its close relationship to the national income.

As indicated previously, the two aggregates are not necessarily equal and, in fact, are not likely ever to be equal over a limited period of time. The reasons for this divergence are twofold. First, as noted in chapter I, business units do not, over the short period, pay out to individuals the exact value of the period's output but retain the ownership of a part of this output in the form of undistributed earnings or under adverse conditions pay out more than the period's net output, notably by failing to meet depreciation and obsolescence charges. Secondly, business enterprises not only make payments to individuals who have contributed to the output of the period but also, in increasing measure, to persons who have made such contributions in the past or who have made no contributions at all. This lack of identity between the value of current output and the aggregate flow of income to consumers has been the subject of increasing attention in business-cycle analysis. In particular, the question is asked: Under what conditions is the current flow of income from business or governmental units into the hands of individuals such as to enable consumers to take off the market the final products of government and industry without giving rise to those economic disturbances that are commonly associated with the business cycle?⁹ Associated with this question is a related problem of equal importance: how does the "consumer disposal" of these funds affect the stability of economic activity? Without entering into any of the theoretical aspects of these related problems, the monthly series on income payments is offered as a measure of the current flow of funds from business enterprises to individuals and constitutes at least a first step essential to an analysis of the disposal of consumer income.

INCOME PAYMENTS AND CONSUMER PURCHASING POWER

In chapter I it was stated that the income-payments series was intended primarily as a measure of changes in the current purchasing power of consumers, but there was no attempt to define the term "purchasing power." In recent years the term has received considerable attention in economic literature, but so far no consistent definition seems to have been evolved. On the whole, it does not seem profitable

⁹ It is not intended to imply that consumer purchasing is the sole or even the most important element in the generation of cyclical changes in business activity. A similarly important role must be assigned to business purchasing, especially of raw materials and durable capital, but this type of demand is necessarily excluded from this discussion.

to speak of a community's power to purchase in general, but rather of its ability to purchase certain types of goods. Purchasing power in the broad sense of the term is a function of wealth as well as of income. Goods can be exchanged against goods, and the only possible limit to the volume of such exchanges in a given period of time is the volume of goods in existence and the velocity with which such exchanges can be accomplished. Such a concept of purchasing power seems to be as little susceptible to practical use as it is possible of precise measurement.

It seems more profitable to restrict the term "consumer purchasing power" to signify the ability of consumers to purchase the new goods and services currently produced by business enterprises. This definition is more consistent with what is conceived to be the primary function of an economic society, namely, the production of new goods and services, the process of exchanging assets assuming importance largely to the degree to which it facilitates this production. Consumer purchasing power in this sense is currently created only by the flow of funds from business enterprises to individuals. That is to say, it is impossible for individuals as such to increase their buying power in the aggregate. It is possible for a given individual to increase his own consumption of the current industrial output by the sale of whatever assets he may possess. But purchases and sales of existing assets among individuals must cancel in the aggregate and, therefore, can neither augment nor decrease the volume of consumer buying power. Similarly the extension of new consumer credits results in no addition to purchasing power insofar as the funds that sustain such credits arise from the current savings of individuals.¹⁰

Even if it be conceded that the purchasing power of consumers, as defined above, is restricted to the flow of funds from business enterprises, it is none the less not valid to identify this aggregate with "income payments," which has been defined as the flow of income from business enterprises. There are circumstances under which the purchases and sales of assets may be said to exert an influence on consumer buying power, namely, in those instances where such transactions take place, not among individuals, but between individuals and business entities. Corporations can, for example by the purchase of securities in the open market, increase the ability of individuals to purchase the current industrial output to the extent that these securities are purchased from individuals, and some authorities have stressed such operations as an important factor in cyclical fluctuations. Similarly, business enterprises may absorb a certain amount of consumer buying power by the open-market sale of securities. Therefore, the usefulness of the income-payment series, as an index of consumer purchasing power, is limited by our present inability to measure transfers of assets between individuals and business units. In practice, the importance of this limitation is minimized by the consideration that at the present time the series is likely to be most useful in analyzing the demand for consumer's goods in the narrow sense and that the major portion of this demand arises from consumers who are but little affected by considerations of the type discussed above.

¹⁰ On the other hand, credits of this nature do have an important influence upon the direction of current demand. The creation of installment credit, e. g., when financed by current savings, results in an increased demand for consumer's goods accompanied by a relative decline in the demand for capital goods. The reverse of this shift in demand accompanies the liquidation of consumer credits.

Moreover, it is in the power of business units in general and of banks in particular to furnish a genuine stimulus to consumer buying by the extension of new credits. This type of consumer borrowing may take two forms: A retailer, for example, may elect to finance his customer by leaving some of his profits in the form of accounts receivable,¹¹ or he may choose to borrow from a bank. In either case, the business community must be considered to have supplied consumers with buying power additional to that which represents a return for services rendered. While changes in the volume of consumer credit are normally small in relation to the average volume of income payments, consumer credit is subject to wide fluctuations and is, therefore, generally recognized as a factor of strategic importance in the analysis of cyclical fluctuations. It is, however, subject to independent measurement and will receive no further consideration here.

Finally, some consideration should be given to the ability of the monetary authority to make new money available to the public. It may be profitable at this point to distinguish between consumer purchasing power as a vague potential and consumer purchasing as a realization of that potential. Income statistics as now presented refer exclusively to the past; therefore, there seems to be little profit in speculating as to how much new money the monetary authority might have made available in the period under review and it seems better to restrict our analysis to the actual volume of new money created.¹²

Similarly, when it is a question of estimating future purchasing power, the ability of the monetary authority to create new money or of the banks to extend new credits is of little consequence. Over the period during which income payments can be forecast with any degree of certainty, the volume of new money or of new credits that are likely to be created can also be estimated with a fair degree of accuracy. In fact, unforeseen changes in either of these items are likely to be associated with simultaneous fluctuations in income. At any rate, both of these forces are subject to independent measurement.

With the three qualifications noted above, the income-payments series presented in this bulletin is believed to represent with a fair degree of accuracy¹³ the volume of funds currently made available to individuals by business enterprises and, therefore, the current level of consumer purchasing power as that concept has been defined above.

It is evident at once that it is impossible to work out a very close correlation between the demand for investment goods and the flow

¹¹ A rigorous analysis would classify this type of lending as merely involving a shift in demand (cf. footnote 10), since undistributed profits generally take the form of a demand for investment goods. However, since business savings are excluded from this analysis, which is by definition limited to consumer purchasing power and excludes any consideration of demand on the part of business units, these credits should for consistency be considered as an actual increase in the consumer demand for current output.

¹² In this respect the use of the term "power" is perhaps unfortunate; its use is justified, however, in conjunction with the term "consumer," since consumer buying power is limited by the actual volume of funds made available by business enterprises. The volume of new money or new credits that might have been but were not made available to consumers may be considered to be analogous to the idle labor and capital which have been particularly characteristic of recent years. Such idle resources might have been brought together to generate additional purchasing power, but, while their measurement is important as indicating the expansive possibilities of the economic system, they may be disregarded in any analysis of its performance.

¹³ Inadequacies in the basic material have already been noted in Chapter I. Most important among these is the want of statistical material that forces us to consider institutional investors, not as business enterprises, but as aggregates of individuals. Minor deficiencies arise, for example, from the exclusion of the funds spent by public institutions on such items as food and clothing, or from the omission of certain business allowances which are charged to business expenses other than salaries and wages.

of current income. Even assuming that it were possible at present to establish some relationship between the incomes and savings of individuals, individual savings represent only a part of the total demand for capital goods. Thus, in 1929, individual savings were supplemented by an estimated \$2,000,000,000 of business savings, whereas in the years 1931-33 individual savings were offset by negative business savings of approximately \$20,000,000,000.

For this reason, the correlation of effective demand with income flow must at present be confined to consumers' goods as distinguished from producers' or capital goods. The sale of consumers' goods at retail affords the most fruitful subject for this type of analysis, partly because such sales represent the one major type of consumer expenditure for which current statistics are available, partly because retail sales account for the major portion of consumer expenditures. Figure 1 illustrates the degree of correlation between the seasonally adjusted

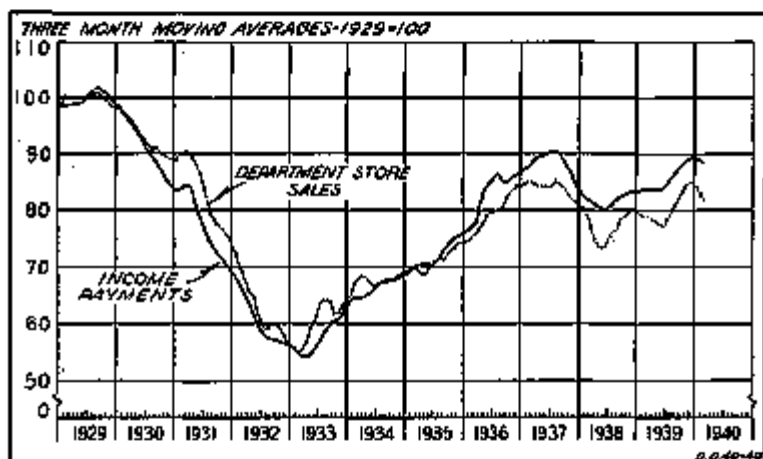


Figure 1.—Income payments and department-store sales.

income index and the Federal Reserve Board's adjusted index of department-store sales, which may be taken as indicative of expenditures of urban consumers on general merchandise other than foods and those of an essentially nondurable nature. On the whole, the relationship is striking for the period 1929-35, particularly when it is considered that department-store sales represent but a minor portion of all retail sales. However, during 1936 and the first half of 1937, department stores failed to share fully in the sharp recovery in income that characterized that period. Several factors may have resulted in the divergence. Indications are that a large portion of the veterans' bonus of 1936 may have gone into a more durable type of goods than those purchasable in department stores, and it is unlikely that any large portion of the extra dividends arising from the operation of the undistributed-profits tax would flow immediately into department-store purchases. The sharply improved level of farm income in 1936 may have been another factor, since farm purchasing appears to only a minor extent in department stores. Subsequent to the 1937 reces-

sion, income and department-store sales have followed generally parallel trends but on different levels as compared with the 1929 averages. The lower level of department-store sales as compared with income since 1937 may be explained in large part by the marked growth in the sales of mail-order houses in recent years.

For purposes of analyzing consumer demand for the current output of goods and services, it may sometimes seem desirable to deduct from current consumer income those outlays over which the consumer may be considered to exercise no choice, or at any rate only a limited choice. Of primary importance among such outlays are, of course, the taxes paid by individuals to Federal, State, and local governments, since in the short run the individual consumer exercises no choice at all over the disposal of this portion of his income. On the other hand, in preparing national-income estimates, it is useful to consider individual taxes as a payment for the services customarily performed by government, the desirability of these services being determined at some period in the past by the democratic process. Whether or not it is necessary or desirable to consider taxes as a species of demand in national-income studies, in the case of income payments it is obviously desirable to determine that portion of consumer income which actually was or is being devoted to taxes in order to approximate more closely the residual income available for the purchase of commodities currently coming into the market. Thus, in analyzing the probable effect of an expected increase in industrial production upon the consumer demand for the new goods arising from the productive process, it would be desirable to be able to determine what proportion of the increased consumer income could be expected to be absorbed by increased taxation.

It is evident, however, that for such an analysis taxes differ only in degree from various other types of fixed outlays or outlays which assume a certain degree of priority in the individual consumer's budgets. Insurance premiums, for example, are not a fixed outlay for a given individual, yet in the aggregate they fluctuate very moderately as compared with other types of purchases. Other items that may for some purposes be considered as fixed outlays are interest on individual mortgages of a nonbusiness character and, over a shorter period, installments on consumer-goods purchased "on time."¹⁴

INCOME PAYMENTS AS AN INDEX OF GENERAL ECONOMIC ACTIVITY

It has been emphasized above that the income-payments series is not intended to be indicative of changes in the output of the economic community, but, inasmuch as by far the larger part of all individual income received represents a payment for some service rendered in the production of an economic good, the monthly series reflects in

¹⁴ It will be noted that in one instance the current series does make allowance for tax deductions from current income—i. e., for contributions to the Social Security programs. Those contributions may be considered as merely insurance premiums which, because the schedule of payments is prescribed by law as in the case of any tax, can be readily calculated. In future releases it may be desirable to adjust the income series for tax outlays if studies of the tax payments of individuals make such an adjustment feasible. The consideration of other types of fixed outlays appear to be somewhat farther in the future, since primary data are lacking at present.

considerable degree¹² the current output of goods and services, and represents the most comprehensive measure of general economic activity now available. This is not to say that the income index is thereby the most significant index of economic change. Perhaps it is more useful to look upon this index as a background against which to view the changes in the more sensitive indicators of business activity. This relationship may be illustrated by a comparison of income payments with some of the more restricted and therefore more sensitive business indicators such as the index of industrial production.

During the past 8 years of pronounced business fluctuations, the industrial production index of the Federal Reserve Board varied much more than did the index of income payments. The production index declined from 117 in August of 1937 to 76 in May 1938, a drop of more than one-third as compared with a decline of less than one-eighth in income payments. Similarly, the production index rose from 92 in May 1939 to 127 in December, a gain of about 40 percent, whereas the income index increased less than 10 percent during the same period. Of primary importance in the relative stability of the income series is the inclusion in it of all the service and distributive industries as well as the more volatile commodity-producing industries. On the other hand, price changes enter into the income index and tend to work for greater instability relative to physical output. The net result of these influences is to make variations in the income index vitally dependent on fluctuations in industrial output, but in no very simple manner. Thus, during the 24 months following the peak of 1929, a drop of one-third in the production index was associated with a decline of one-fourth in income payments. It is, therefore, indicated that whereas the drop in industrial production during 1937 and 1938 was as great as that during the period 1929-31, the former was relatively restricted in its effects upon the economy as a whole. Similarly, although the 40 percent rise in production during the latter part of 1939 was associated with a rise of only 10 percent in the income index, the higher levels of production, if sustained for any length of time, might be expected to give rise to a greatly increased volume of income payments.

The accompanying chart permits a more detailed analysis of the relationship between income and industrial activity. For purposes of comparison, it was desirable that the production series be adjusted to represent the value rather than the volume of current output. Therefore, the index of manufacturing production was multiplied by the Bureau of Labor Statistics' index of wholesale prices of finished products, and the output of petroleum, anthracite, and bituminous

¹² As noted in ch. I, the adjusted income index as now published contains several items, notably direct relief and the soldier's bonus, whose wide fluctuations in recent years are quite unrelated to business activity, and which might easily be removed from the series. In fact, it would be a simple matter to correct the series for all items not related to business activity and to publish two adjusted series, one representing the flow of income to consumers, the other the share of the national income currently distributed to the productive agents. It is felt, however, that the resulting gain in accuracy would be more than offset by the possible confusion caused by the publication of two series whose month-to-month fluctuations would in most periods be very similar. Therefore, the income-payments series alone is introduced in the following discussion. For measuring changes in economic activity some may prefer the adjusted index of salaries and wages which does not reflect the secular increase in direct relief or the 1931 and 1932 payments to veterans. This index, however, is also defective in several respects; e. g., agriculture is inadequately represented, since agricultural wages represent a very small proportion of total income in agriculture, and secondly, over the period 1929-38 labor income has experienced a slight growth relative to total national income. On a month-to-month basis, however, the changes in the adjusted wage index are probably more representative than the total income index of current changes in nonagricultural activity. This comparison is particularly true during the period in which unemployment compensation benefits have begun to offset pay-roll changes to some degree.

coal by appropriate price indexes. To afford further comparability with the series on labor income in the commodity-producing industries, the value of construction contracts awarded (seasonally corrected) was included in the composite production series and each of the individual series weighted by the income produced in that industry in 1929. All three of the composite series (production, total income, and labor income in the commodity-producing industries—less agriculture) are shown in the form of 3-months moving averages to eliminate minor variations and facilitate comparison.

As was to be expected, there is a close correlation between the dollar value of industrial output and salaries and wages originating in the commodity-producing industries. The income series is more stable with respect to shorter fluctuations, but follows the dollar value of production very closely on the long swings. Thus, by the

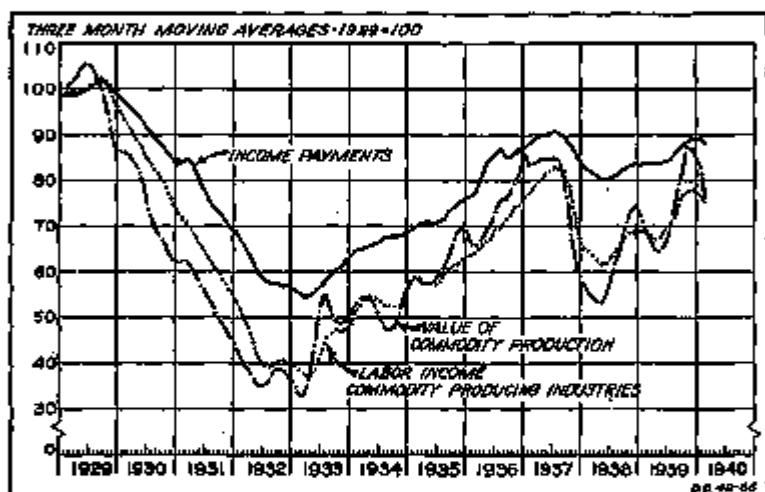


Figure 2.—Income payments and commodity production.*

spring of 1933, income had reached a low point 64 percent below its 1929 maximum, whereas a month or two earlier the value of current production had turned upward from a point 69 percent below its predepression peak. In the summer of 1937 both indexes approximated 80 percent of their respective 1929 peaks. The relatively greater stability of the income index may be explained in large part by the heavy weight given to durable producer's goods in the Reserve Board's index of manufacturing production.

The month-to-month fluctuations in the index of total income payments are of a very mild character as compared with the series discussed above. In general, minor fluctuations in industrial output are not reflected in total income payments except as they take the form of changes in the slope of the latter curve. Thus, the tempo-

* With respect to Fig. 2, above, it should be noted that this report was in proof form when the Reserve Board completely revised its index of industrial production to provide a broader measure of current changes in industrial output. The relationships noted above are, however, but little affected by the inclusion of the new series in the commodity-value index. Prior to 1936 the latter index was virtually unchanged by the substitution, although it showed slightly greater resistance to short-term fluctuations. Since 1936, however, the new series shows a marked secular rise relative to the old series and also relative to the labor-income index and since 1937 has averaged considerably higher than either of these series on a 1929 base.

rary industrial recovery in the fall of 1932 resulted merely in slowing up the decline in income payments which continued into the spring of 1933. Similarly, the fluctuations in industrial output after the speculative spurt in 1933 were reflected in a slower rate of growth in income during 1934 as compared with the rapid increase during 1933 and that which began in June 1935. Reflecting the short-term stability in income payments, the index has shown only five definite reversals of trend in the 11-year period covered by the series—these trend reversals being associated with the long cycle that reached its peak in the fall of 1929 and its trough in the spring of 1933, and the shorter cycles of the past 3 years, in particular the downward turn in the late summer of 1937, the upward swing that began in the middle of the following year, and the recent decline from the peak of December 1939.

It will be noted that for the period 1929 to 1935, the value of commodity production, exclusive of agriculture, shows a lead of 1 to 3 months over the index of labor income in the same general industries. This relationship is particularly noticeable in 1929. Although industrial production reached its peak about the end of the second quarter of the year and declined sharply throughout the third quarter, the income index advanced markedly throughout the latter period and did not show a noticeable decline until the final quarter of the year. The lead of production over income appears also in the rise that began in the fall of 1932 and again in the spring of 1933, and in every other instance in the following few years, but in no case is the timing as clearly marked as in 1929. Since 1937 it is impossible to establish any definite tendency of this nature.

In respect to timing, the four trend reversals in the total index noted coincide with trend reversals in the index for the commodity-producing industries, although minor trend reversals in the latter series have no counterpart in total income. This close correspondence is more or less to be expected since the commodity-producing industries account for about 30 percent of total income payments and represent by far the most variable component of that total.

In general, then, it may be said that although the index of total income reflects the general changes in industrial output in the past 10 years, the income index has, on the whole, shown much more resistance to cyclical fluctuations than the former index, and shows considerably more stability in the short run.¹⁷ In computing the index from month to month, it has frequently been remarked that a sharp rise in industrial production during a given month may be accompanied by a very small rise in the income index. This must be explained not only by the relative stability in certain components of the dollar index but also by the fact that it takes a certain amount of time for impulses generated in any given branch of the manufacturing industry to propagate themselves through the economic system. Figure 3 illustrates the manner in which various industries are affected by changes in the volume of current industrial output.

¹⁷ It is proper to point out that this short-run stability may reflect in part rather inadequate source material and sometimes arbitrary methods of handling such material as is available. In particular, the method of adjusting dividends and interest for seasonal variation is such as to yield a smooth curve free of minor fluctuations; similarly, monthly withdrawals are estimated on the assumption that the entrepreneur frequently draws upon his capital to maintain his scale of living and that withdrawals are, over the short term, relatively independent of net income which may be supposed to fluctuate more or less with current business activity.

Here the pay rolls in the economic system are classified into three groups of industries: Pay rolls in the commodity-producing industries depend very closely even in month-to-month fluctuations on industrial production; the distributive industries perform services for both producer and consumer and, therefore, reflect both changes in industrial activity and consumer expenditures; whereas salaries and wages received in the service industries depend directly on consumer expenditures and only in a general way on current industrial output. Government pay rolls are not shown here since they can be assumed to bear no relation to industrial production in the short run. Of course, the interdependence of the various industries is greater than that indicated, since industrial output and consumer income are very closely related. Therefore, month-to-month changes in current income reflect not only current changes in industrial output but also the cumulative effects of recent changes in the same aggregate.

It is not to be expected that over longer periods of time the income index will continue to reflect changed levels of industrial output, owing to the varying rates of growth of different industries. Figure 3 indicates that, over the past 10 years, the service industries have shown a secular growth relative to the distributive industries. No such conclusion is possible with respect to the commodity-producing industries, since it is impossible to determine how "normal" was the situation existing in the first half of 1937. Collateral evidence on this point, however, indicates a gradual decline in the relative importance of the commodity-producing industries in the decade ended 1928 and suggests that this relative decline in importance may well have continued into the period covered by the monthly income-payments series.

The accompanying chart (fig. 4) permits a comparison of the trend in income payments with that in bank debits outside New York City over the past 7 years. Both series are represented by 3-month moving averages to facilitate graphical comparison. This comparison is of particular interest because income payments have often been identified with the gross volume of money transactions. Actually, income payments represent only a small fraction of all transactions. Thus, in 1939, income payments totaled 70 billion dollars whereas bank debits in 141 cities outside of New York City totaled 218 billion dollars. Debits of New York City banks accounted for an additional 150 billions. In addition to income payments, other important factors in the debiting of accounts are interbusiness transfers and title transfers among individuals, particularly stock-exchange transfers. The importance of the latter item is greatly diminished, however, by excluding the debits of New York City banks and by confining the comparison to the period following the bank crisis of 1933. For this period the two series show a very high degree of correlation with respect to cyclical fluctuations. The income index is more stable in the short run because of the relatively greater sensitivity of bank debits to month-to-month fluctuations in general business activity. For the years prior to 1933, the bank debits index exhibited markedly wider cyclical fluctuations than the income index. In 1933 income payments were 40 percent below 1929, whereas bank debits showed a drop of 56 percent over the same period, reflecting partly the abnormally large volume of stock transfers in the earlier years.

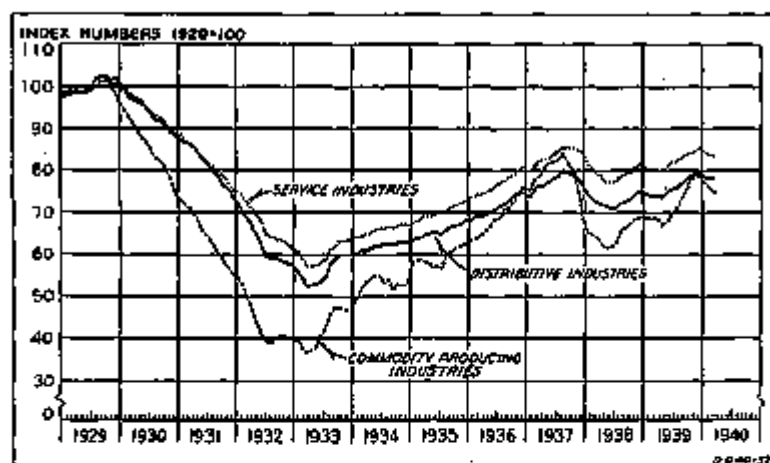


Figure 3.—Indexes of salaries and wages by major industrial groups.

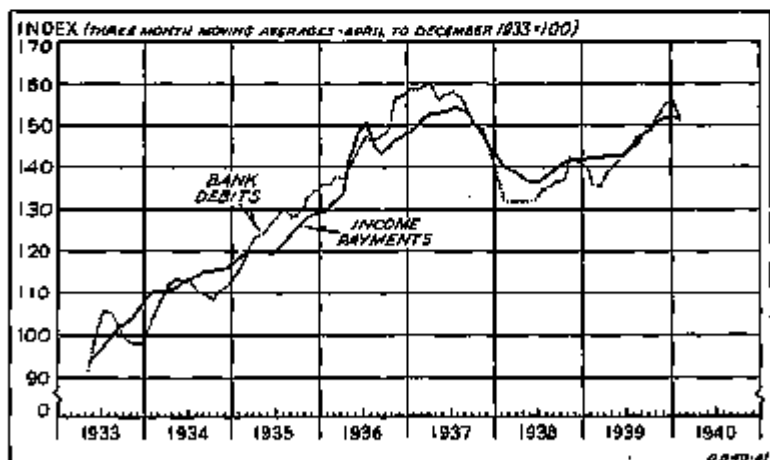


Figure 4.—Income payments and bank debts.

Table 2.—Income Payments, by Month, 1929-40

Year and month	Index of total income payments adjusted	Total income payments Millions of dollars	Salaries and wages						Direct and other relief	Social Security benefits and other income	Divi- dends and interest	Entre- preneurial income and net rental and royalties	Nonagricultural income			
			Adjusted index 1929=100	Total	Com- modity- producing industries	Distributive in- dustries		Service in- dustries					Govern- ment	Work relief wages	Total	Adjusted Index
						Millions of dollars										
1929																
January	96.5	6,937	96.5	4,146	1,641	1,117	970	419	.....	77	1,347	1,362	6,320	99.0	
February	96.2	6,345	96.2	4,176	1,664	1,093	976	419	.....	76	1,795	1,290	5,807	98.9	
March	98.9	6,533	98.9	4,276	1,748	1,129	978	421	.....	77	1,833	1,266	6,130	99.1	
April	99.0	6,719	99.0	4,341	1,831	1,140	978	423	.....	77	1,837	1,266	6,130	99.1	
May	99.0	6,681	99.0	4,406	1,831	1,163	978	423	.....	78	1,837	1,266	6,130	99.1	
June	99.2	6,681	99.2	4,406	1,831	1,163	978	423	.....	78	1,837	1,266	6,130	99.1	
July	100.2	7,190	100.2	4,535	1,985	1,179	981	426	.....	78	1,837	1,266	6,443	99.6	
August	101.3	6,790	101.3	4,398	1,816	1,179	984	423	.....	78	1,837	1,266	6,443	100.6	
September	102.3	6,686	102.3	4,404	1,816	1,179	984	423	.....	78	1,837	1,266	6,443	101.6	
October	101.4	6,686	101.4	4,404	1,816	1,179	984	423	.....	78	1,837	1,266	6,443	101.6	
November	102.0	7,400	102.0	4,501	1,941	1,906	986	437	.....	79	1,904	1,451	6,443	101.7	
December	102.0	6,818	102.0	4,371	1,784	1,966	986	435	.....	79	1,904	1,451	6,443	101.7	
Total	98.5	6,784	98.5	4,304	1,684	1,184	987	428	.....	79	1,921	1,374	6,443	99.6	
1930																
January	97.5	6,989	97.5	4,087	1,587	1,116	973	431	.....	90	1,835	1,389	6,469	99.7	
February	97.0	6,211	97.0	4,090	1,587	1,093	976	431	.....	79	1,835	1,389	6,469	99.7	
March	96.1	6,296	96.1	4,082	1,587	1,093	976	431	.....	81	1,835	1,389	6,469	99.7	
April	94.5	6,416	94.5	4,090	1,587	1,108	982	435	.....	81	1,835	1,389	6,469	99.7	
May	94.5	6,416	94.5	4,090	1,587	1,108	982	435	.....	81	1,835	1,389	6,469	99.7	
June	94.5	6,416	94.5	4,090	1,587	1,108	982	435	.....	81	1,835	1,389	6,469	99.7	
July	91.7	6,416	91.7	4,090	1,587	1,098	987	437	.....	75	1,835	1,389	6,469	99.7	
August	90.0	6,416	90.0	4,090	1,587	1,074	917	437	.....	75	1,835	1,389	6,469	99.7	
September	88.6	6,416	88.6	4,090	1,587	1,049	902	430	.....	83	1,835	1,389	6,469	99.7	
October	86.4	6,416	86.4	4,090	1,587	1,049	902	430	.....	83	1,835	1,389	6,469	99.7	
November	84.8	6,416	84.8	4,090	1,587	1,049	902	430	.....	83	1,835	1,389	6,469	99.7	
December	83.9	6,416	83.9	4,090	1,587	1,049	902	430	.....	83	1,835	1,389	6,469	99.7	
Total	94.9	74,094	94.9	47,426	18,494	12,860	11,106	5,023	4	989	11,715	14,300	69,188	98.1		

1921	1922										1923		
	January	February	March	April	May	June	July	August	September	October	November	December	Total
81.7	81.9	82.1	82.3	82.5	82.7	82.9	83.1	83.3	83.5	83.7	83.9	84.1	84.3
5.923	5.971	5.979	5.987	5.995	6.003	6.011	6.019	6.027	6.035	6.043	6.051	6.059	6.067
1.311	1.319	1.327	1.335	1.343	1.351	1.359	1.367	1.375	1.383	1.391	1.399	1.407	1.415
429	430	431	432	433	434	435	436	437	438	439	440	441	442
8.070	8.071	8.072	8.073	8.074	8.075	8.076	8.077	8.078	8.079	8.080	8.081	8.082	8.083
11,070	11,071	11,072	11,073	11,074	11,075	11,076	11,077	11,078	11,079	11,080	11,081	11,082	11,083
14,159	14,160	14,161	14,162	14,163	14,164	14,165	14,166	14,167	14,168	14,169	14,170	14,171	14,172
32,805	32,806	32,807	32,808	32,809	32,810	32,811	32,812	32,813	32,814	32,815	32,816	32,817	32,818
63,453	63,454	63,455	63,456	63,457	63,458	63,459	63,460	63,461	63,462	63,463	63,464	63,465	63,466
48.3	48.4	48.5	48.6	48.7	48.8	48.9	49.0	49.1	49.2	49.3	49.4	49.5	49.6
4.945	4.946	4.947	4.948	4.949	4.950	4.951	4.952	4.953	4.954	4.955	4.956	4.957	4.958
1.307	1.308	1.309	1.310	1.311	1.312	1.313	1.314	1.315	1.316	1.317	1.318	1.319	1.320
4.132	4.133	4.134	4.135	4.136	4.137	4.138	4.139	4.140	4.141	4.142	4.143	4.144	4.145
4.070	4.071	4.072	4.073	4.074	4.075	4.076	4.077	4.078	4.079	4.080	4.081	4.082	4.083
2.883	2.884	2.885	2.886	2.887	2.888	2.889	2.890	2.891	2.892	2.893	2.894	2.895	2.896
2.826	2.827	2.828	2.829	2.830	2.831	2.832	2.833	2.834	2.835	2.836	2.837	2.838	2.839
2.769	2.770	2.771	2.772	2.773	2.774	2.775	2.776	2.777	2.778	2.779	2.780	2.781	2.782
2.712	2.713	2.714	2.715	2.716	2.717	2.718	2.719	2.720	2.721	2.722	2.723	2.724	2.725
2.655	2.656	2.657	2.658	2.659	2.660	2.661	2.662	2.663	2.664	2.665	2.666	2.667	2.668
2.598	2.599	2.600	2.601	2.602	2.603	2.604	2.605	2.606	2.607	2.608	2.609	2.610	2.611
2.541	2.542	2.543	2.544	2.545	2.546	2.547	2.548	2.549	2.550	2.551	2.552	2.553	2.554
2.484	2.485	2.486	2.487	2.488	2.489	2.490	2.491	2.492	2.493	2.494	2.495	2.496	2.497
2.427	2.428	2.429	2.430	2.431	2.432	2.433	2.434	2.435	2.436	2.437	2.438	2.439	2.440
2.370	2.371	2.372	2.373	2.374	2.375	2.376	2.377	2.378	2.379	2.380	2.381	2.382	2.383
2.313	2.314	2.315	2.316	2.317	2.318	2.319	2.320	2.321	2.322	2.323	2.324	2.325	2.326
2.256	2.257	2.258	2.259	2.260	2.261	2.262	2.263	2.264	2.265	2.266	2.267	2.268	2.269
2.199	2.200	2.201	2.202	2.203	2.204	2.205	2.206	2.207	2.208	2.209	2.210	2.211	2.212
2.142	2.143	2.144	2.145	2.146	2.147	2.148	2.149	2.150	2.151	2.152	2.153	2.154	2.155
2.085	2.086	2.087	2.088	2.089	2.090	2.091	2.092	2.093	2.094	2.095	2.096	2.097	2.098
2.028	2.029	2.030	2.031	2.032	2.033	2.034	2.035	2.036	2.037	2.038	2.039	2.040	2.041
1.971	1.972	1.973	1.974	1.975	1.976	1.977	1.978	1.979	1.980	1.981	1.982	1.983	1.984
1.914	1.915	1.916	1.917	1.918	1.919	1.920	1.921	1.922	1.923	1.924	1.925	1.926	1.927
1.857	1.858	1.859	1.860	1.861	1.862	1.863	1.864	1.865	1.866	1.867	1.868	1.869	1.870
1.800	1.801	1.802	1.803	1.804	1.805	1.806	1.807	1.808	1.809	1.810	1.811	1.812	1.813
1.743	1.744	1.745	1.746	1.747	1.748	1.749	1.750	1.751	1.752	1.753	1.754	1.755	1.756
1.686	1.687	1.688	1.689	1.690	1.691	1.692	1.693	1.694	1.695	1.696	1.697	1.698	1.699
1.629	1.630	1.631	1.632	1.633	1.634	1.635	1.636	1.637	1.638	1.639	1.640	1.641	1.642
1.572	1.573	1.574	1.575	1.576	1.577	1.578	1.579	1.580	1.581	1.582	1.583	1.584	1.585
1.515	1.516	1.517	1.518	1.519	1.520	1.521	1.522	1.523	1.524	1.525	1.526	1.527	1.528
1.458	1.459	1.460	1.461	1.462	1.463	1.464	1.465	1.466	1.467	1.468	1.469	1.470	1.471
1.401	1.402	1.403	1.404	1.405	1.406	1.407	1.408	1.409	1.410	1.411	1.412	1.413	1.414
1.344	1.345	1.346	1.347	1.348	1.349	1.350	1.351	1.352	1.353	1.354	1.355	1.356	1.357
1.287	1.288	1.289	1.290	1.291	1.292	1.293	1.294	1.295	1.296	1.297	1.298	1.299	1.300
1.230	1.231	1.232	1.233	1.234	1.235	1.236	1.237	1.238	1.239	1.240	1.241	1.242	1.243
1.173	1.174	1.175	1.176	1.177	1.178	1.179	1.180	1.181	1.182	1.183	1.184	1.185	1.186
1.116	1.117	1.118	1.119	1.120	1.121	1.122	1.123	1.124	1.125	1.126	1.127	1.128	1.129
1.059	1.060	1.061	1.062	1.063	1.064	1.065	1.066	1.067	1.068	1.069	1.070	1.071	1.072
1.002	1.003	1.004	1.005	1.006	1.007	1.008	1.009	1.010	1.011	1.012	1.013	1.014	1.015
945	946	947	948	949	950	951	952	953	954	955	956	957	958
888	889	890	891	892	893	894	895	896	897	898	899	900	901
831	832	833	834	835	836	837	838	839	840	841	842	843	844
774	775	776	777	778	779	780	781	782	783	784	785	786	787
717	718	719	720	721	722	723	724	725	726	727	728	729	730
660	661	662	663	664	665	666	667	668	669	670	671	672	673
603	604	605	606	607	608	609	610	611	612	613	614	615	616
546	547	548	549	550	551	552	553	554	555	556	557	558	559
489	490	491	492	493	494	495	496	497	498	499	500	501	502
432	433	434	435	436	437	438	439	440	441	442	443	444	445
375	376	377	378	379	380	381	382	383	384	385	386	387	388
318	319	320	321	322	323	324	325	326	327	328	329	330	331
261	262	263	264	265	266	267	268	269	270	271	272	273	274
204	205	206	207	208	209	210	211	212	213	214	215	216	217
147	148	149	150	151	152	153	154	155	156	157	158	159	160
90	91	92	93	94	95	96	97	98	99	100	101	102	103
33	34	35	36	37	38	39	40	41	42	43	44	45	46
1	2	3	4	5	6	7	8	9	10	11	12	13	14
16	17	18	19	20	21	22	23	24	25	26	27	28	29
88	89	90	91	92	93	94	95	96	97	98	99	100	101
1,583	1,584	1,585	1,586	1,587	1,588	1,589	1,590	1,591	1,592	1,593	1,594	1,595	1,596
1,600	1,601	1,602	1,603	1,604	1,605	1,606	1,607	1,608	1,609	1,610	1,611	1,612	1,613
10,270	10,271	10,272	10,273	10,274	10,275	10,276	10,277	10,278	10,279	10,280	10,281	10,282	10,283
11,368	11,369	11,370	11,371	11,372	11,373	11,374	11,375	11,376	11,377	11,378	11,379	11,380	11,381
26,224	26,225	26,226	26,227	26,228	26,229	26,230	26,231	26,232	26,233	26,234	26,235	26,236	26,237
5.907	5.908	5.909	5.910	5.911	5.912	5.913	5.914	5.915	5.916	5.917	5.918	5.919	5.920
1.009	1.010	1.011	1.012	1.013	1.014	1.015	1.016	1.017	1.018	1.019	1.020	1.021	1.022
429	430	431	432	433	434	435	436	437	438	439	440	441	442
8.070	8.071	8.072	8.073	8.074	8.075	8.076	8.077	8.078	8.079	8.080	8.081	8.082	8.083
11,070	11,071	11,072	11,073	11,074	11,075	11,076	11,077	11,078	11,079	11,080	11,081	11,082	11,083
14,159	14,160	14,161	14,162	14,163	14,164	14,165	14,166	14,167	14,168	14,169	14,170	14,171	14,172
32,805	32,806	32,807	32,808	32,809	32,810	32,811	32,812	32,813	32,814	32,815	32,816	32,817	32,818
63,453	63,454	63,455	63,456	63,457	63,458	63,459	63,460	63,461	63,462	63,463	63,464	63,465	63,466
48.3	48.4	48.5	48.6	48.7	48.8	48.9	49.0	49.1	49.2	49.3	49.4	49.5	49.6
4.945	4.946	4.947	4.948	4.949	4.950	4.951	4.952	4.953	4.954	4.955	4.956	4.957	4.958
1.307	1.308	1.309	1.310	1.311	1.312	1.313	1.314	1.315	1.316	1.317	1.318	1.319	1.320
4.132	4.133	4.134	4.135	4.136	4.137	4.138	4.139	4.140	4.141	4.142	4.143	4.144	4.145
4.070	4.071	4.072	4.073	4.074	4.075	4.076	4.077	4.078	4.079	4.080	4.081	4.082	4.083
2.883	2.884	2.885	2.886	2.887	2.888	2.889							

Table 2.--Income Payments, by Months, 1929-40--Continued

Year and month	Index of total income payments adjusted	Total income payments	Salaries and wages							Social security benefits and other labor income	Dividends and interest	Entrepreneurial income and net rents and royalties	Nongovernmental income	
			Adjusted index	Total	Compensating industries	Distributive industries	Services industries	Government wages	Work relief wages				Total	Adjusted index
1929=100	1929=100	Millions of dollars	Millions of dollars							1929=100				
1929														
January	64.4	4,088	64.2	678	682	347	247	65	74	1,013	800	4,338	65.0	
February	64.5	4,106	64.3	683	687	376	182	53	73	647	703	4,805	66.4	
March	64.6	4,214	64.4	708	693	377	182	53	75	647	703	4,805	66.4	
April	64.7	4,332	64.5	705	698	378	171	63	74	705	781	4,884	66.7	
May	64.8	4,344	64.6	718	697	387	177	63	81	431	759	4,904	66.7	
June	64.9	4,411	64.7	720	699	393	177	63	82	630	837	4,984	66.8	
July	65.0	4,437	64.7	720	699	393	177	63	82	630	837	4,984	66.8	
August	65.1	4,503	64.8	720	699	393	177	63	82	630	837	4,984	66.8	
September	67.0	4,563	64.9	729	699	393	177	63	82	630	837	4,984	66.8	
October	67.1	4,563	64.9	729	699	393	177	63	82	630	837	4,984	66.8	
November	67.2	4,563	64.9	729	699	393	177	63	82	630	837	4,984	66.8	
December	67.3	4,563	64.9	729	699	393	177	63	82	630	837	4,984	66.8	
Total	67.4	4,740	65.5	741	693	405	194	69	83	777	900	4,353	68.1	
1928														
January	64.2	3,702	64.0	678	682	347	247	65	74	1,013	800	4,338	65.0	
February	64.3	3,780	64.1	683	687	376	182	53	73	647	703	4,805	66.4	
March	64.4	3,815	64.2	708	693	377	182	53	75	647	703	4,805	66.4	
April	64.5	3,932	64.3	705	698	378	182	53	74	705	781	4,884	66.7	
May	64.6	3,944	64.4	718	697	387	171	63	81	431	759	4,904	66.7	
June	64.7	4,011	64.5	720	699	393	177	63	82	630	837	4,984	66.8	
July	64.8	4,037	64.5	720	699	393	177	63	82	630	837	4,984	66.8	
August	64.9	4,103	64.6	720	699	393	177	63	82	630	837	4,984	66.8	
September	67.0	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
October	67.1	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
November	67.2	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
December	67.3	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
Total	67.4	4,340	65.5	741	693	405	194	69	83	777	900	4,353	68.1	
1927														
January	64.2	3,702	64.0	678	682	347	247	65	74	1,013	800	4,338	65.0	
February	64.3	3,780	64.1	683	687	376	182	53	73	647	703	4,805	66.4	
March	64.4	3,815	64.2	708	693	377	182	53	75	647	703	4,805	66.4	
April	64.5	3,932	64.3	705	698	378	182	53	74	705	781	4,884	66.7	
May	64.6	3,944	64.4	718	697	387	171	63	81	431	759	4,904	66.7	
June	64.7	4,011	64.5	720	699	393	177	63	82	630	837	4,984	66.8	
July	64.8	4,037	64.5	720	699	393	177	63	82	630	837	4,984	66.8	
August	64.9	4,103	64.6	720	699	393	177	63	82	630	837	4,984	66.8	
September	67.0	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
October	67.1	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
November	67.2	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
December	67.3	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
Total	67.4	4,340	65.5	741	693	405	194	69	83	777	900	4,353	68.1	
1926														
January	64.2	3,702	64.0	678	682	347	247	65	74	1,013	800	4,338	65.0	
February	64.3	3,780	64.1	683	687	376	182	53	73	647	703	4,805	66.4	
March	64.4	3,815	64.2	708	693	377	182	53	75	647	703	4,805	66.4	
April	64.5	3,932	64.3	705	698	378	182	53	74	705	781	4,884	66.7	
May	64.6	3,944	64.4	718	697	387	171	63	81	431	759	4,904	66.7	
June	64.7	4,011	64.5	720	699	393	177	63	82	630	837	4,984	66.8	
July	64.8	4,037	64.5	720	699	393	177	63	82	630	837	4,984	66.8	
August	64.9	4,103	64.6	720	699	393	177	63	82	630	837	4,984	66.8	
September	67.0	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
October	67.1	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
November	67.2	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
December	67.3	4,163	64.7	729	699	393	177	63	82	630	837	4,984	66.8	
Total	67.4	4,340	65.5	741	693	405	194	69	83	777	900	4,353	68.1	

Appendix.—SOURCES AND METHODS

It should first be pointed out that for the most part the individual components of the monthly series are based upon annual income estimates prepared in the National Income Division. The sources and methods employed in constructing the annual estimates have been discussed elsewhere,¹ and no attempt will be made to describe them here. Because the monthly estimates are corrected each year within a short period after the completion of the annual income totals, the importance of cumulative errors creeping into the monthly data is not very great. On the whole, comparisons of the annual aggregate of monthly estimates with the subsequent annual figures have so far yielded fairly satisfactory results. Thus, for the year 1938, the following results were obtained:

Percentage Change in Income Payments by Type of Payment, 1938 to 1939

Item	Preliminary estimate, January 1940 ¹	Revised estimate, September 1940 ¹
Wages and salaries.....	+5.8	+5.7
Dividends and interest.....	+2.1	+2.8
Entrepreneurial income.....	+2.2	+4.0
Total income payments.....	+5.1	+4.8

¹ Based on the original monthly figures for 1939.

² Revisions based on the annual income estimates for 1939.

It should be noted that the annual estimates of national income, particularly for the years 1938 and 1939, are subject to further revision as additional source material becomes available. Though the absolute level of estimated income in both years may change as the result of further information, experience has shown that the trend from one year to another is likely to be but little affected by further revisions. Even in the case of dividends for which substantial revisions may be necessary on the publication of Statistics of Income for the year in question, the monthly dividend estimates are likely to approximate the preliminary annual estimate of dividends, since both are subject to the same limitation—that they depend too greatly upon the reported dividend disbursements of large corporations.

METHODS OF ADJUSTING MONTHLY INDEXES TO ANNUAL ESTIMATES

Inasmuch as the monthly series is adjusted to annual estimates, special interest attaches to the methods by which the adjustment is made. In only a few industries are the monthly pay-roll data sufficiently complete so that the annual estimates represent merely a summation of the pay rolls for the individual months. In many instances annual totals are available, whereas current estimates must be based upon industry samples or upon series only indirectly related to income in a given industry. In other instances periodical surveys or censuses must be used to bring a monthly index into line with the actual trend in an industry.

In correcting the monthly income estimates to the annual totals, two general methods have been used. One of the methods used is that adopted by the Bureau of Labor Statistics in adjusting its employment and pay-roll indexes to conform with the trends of the industrial surveys of the Bureau of the Census. This is essentially a straight-line adjustment between the annual averages shown in a pair of census years. Underlying this method is the assumption that none of the observed bias arose in the earlier census year, but that the causes producing this

¹ In detail in the volume *National Income in the United States 1929-35*, and briefly in *Income in the United States, 1929-37*.

bias began to operate in January of the following year and continued to operate at a uniform rate until December of the second census year. A description of the method is presented in Bulletin No. 610 of the United States Bureau of Labor Statistics.

Because of its simplicity, the Bureau of Labor Statistics' method was considered satisfactory for periods of time longer than 1 year, but for adjusting the monthly series to annual totals for each year it is believed to give too serious a distortion to the month-to-month comparisons, since all of the correction would be made in the second year of a 2-year comparison. This is especially true in the final months of the year when an error is particularly important because all succeeding values of the series must be distorted to the same extent. Therefore, in making annual adjustments, the method used was one based upon an unpublished paper by V. Lewis Bassie of the U. S. Department of Commerce. This method involves the assumption that the observed bias may have developed at any time between January of the first census year and December of the second census year. The most probable development of the bias is then calculated by constructing a third-degree correction curve which is characterized by the following four limiting conditions: (1) In the first year the average correction is zero; (2) in the

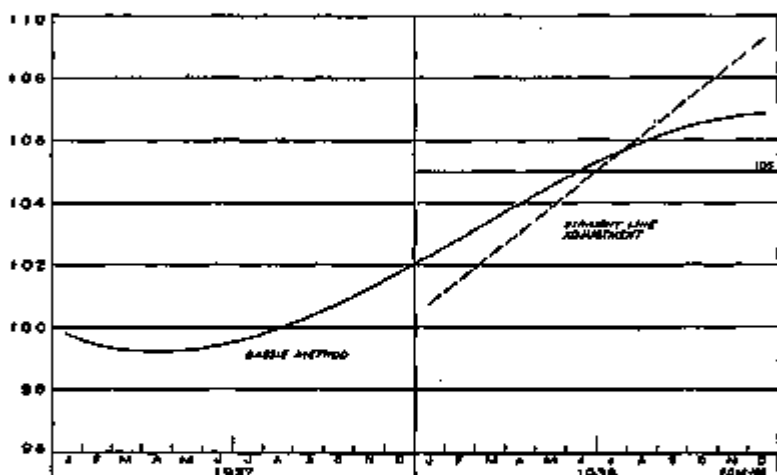


Figure 5.—Methods of adjusting monthly data to annual averages.

second year the average correction is such as will be necessary to bring the index into line with the census results; (3) the correction shall be zero at the beginning of the first year; and (4) the slope of the correction curve is zero at the end of the second census year. Mr. Bassie's mathematical formula, which was originally derived in order to correct for biennial surveys, was then modified so as to be applicable to those cases in which a survey (or at any rate information more reliable than that available monthly) was available every year.

The accompanying chart indicates the difference between the results obtained by the two methods described above. In constructing the chart it was assumed that the necessary correction was one of 5 percent. A further difference should be noted in the methods of correction. The straight line method is of an arithmetic nature, the necessary correction for each month being added to the unadjusted data. In the application of the corrections derived from the third-degree curve, the corrections so obtained are added to or subtracted from 100 percent and the resulting percentage multiplied by the monthly values of the unadjusted series. Although this method will not reduce the total for the second year to the exact survey total, the resulting error will be negligible. In those instances in which the necessary correction is small and the seasonal fluctuations in the unadjusted series of minor importance, some saving of labor is obtained, without a corresponding reduction in accuracy, by applying an arithmetic correction derived from the third-degree curve shown in the chart.

NATURE OF THE DOLLAR TOTALS AND ADJUSTED INDEXES

In the analysis of time series it has been found useful to distinguish four factors which constitute the fluctuations in such a series. These factors are, respectively, the secular trend, and cyclical, seasonal, and random elements. The process of adjustment for seasonal variation consists in eliminating the seasonal influence in order to facilitate an analysis of the trend, cycle, and random elements.

In the case of the present series, neither the totals nor the adjusted indexes can be considered to conform strictly to this usage. The character of the component series will be evident from the methods of estimation outlined below, but it may be useful here to indicate the general character of the unadjusted dollar totals of income payments. In general the unadjusted series includes all four elements, but in some instances random elements are necessarily excluded by the method of estimation. This would, in particular, be true wherever a seasonal movement is superimposed upon a trend-cycle line constructed from the annual figures—which was the procedure adopted in estimating labor income in several minor industrial fields. In other instances, as in estimating net rents and royalties, it has not been considered feasible even to impose seasonal fluctuations, and in such instances only trend and cycle elements enter into the composite series. For most of the fields for which such procedures are necessary, however, as, for example, in estimating rents and royalties or income in the service industries, random or seasonal elements are not believed to be of great importance. Such a generalization may not, however, be expected to hold true of such critical periods as the early months of 1933.

The adjusted index of total income payments contains even fewer random elements than the unadjusted totals because of the special treatment accorded to dividend and interest payments. Because the seasonal pattern, particularly for dividends, is of a very unstable character, it is impossible to distinguish very satisfactorily between seasonal and random elements, and, therefore, the seasonal adjustment adopted is of such a character as to remove not only all seasonal influences but also all random elements of a short-term character. In one other respect the adjusted index does not conform to general practice: namely, for relief payments and other benefits it has not been considered advisable to attempt a seasonal adjustment. For these items the movement appears to be highly irregular, and a sufficiently long period is not available to yield a satisfactory seasonal pattern. Consequently, the seasonal elements undoubtedly present in relief payments impart a slight seasonal influence to the adjusted index of total income payments. On the other hand, relief benefits represent but a very small fraction of all income disbursements, and, when properly weighted, their seasonal variations may be considered to be of negligible importance.

Some few remarks are in order here as to the purposes which it is believed that the totals and the adjusted indexes will serve. In general it is believed that the adjusted index will be the more useful at the present time because the wide seasonal fluctuations in certain items, particularly dividends and interest, give a rather misleading picture of changes in economic activity. Even in analyzing consumer demand the unadjusted totals are of rather limited value because of the present impossibility of correcting for the flow of funds into and out of savings accounts and other deposits. Nevertheless, the unadjusted totals are presented for those who may wish to attempt such adjustments. However, as noted in the body of this report, the series is at present most readily applicable to the analysis of the demand for consumers' goods in the narrow sense and for such expenditures the seasonally adjusted index may be considered to give a rough adjustment. Teachers, for the most part, actually receive income during 8 to 10 months of the year, but their expenditures may be assumed to be spread out fairly evenly over the 12 months of the year.

Because of the minor character of the short-term fluctuations in income payments and the possibility of changing seasonal influences in various industries, too much importance should not be assigned to small month-to-month changes in the adjusted index. Except in periods of major fluctuations in industrial activity, current comparisons are probably better limited to quarterly averages.

METHODS OF ADJUSTING FOR SEASONAL INFLUENCES

In adjusting the monthly income series for seasonal variation, each of the major component items is adjusted independently. For salaries and wages, a seasonal factor is computed for each of the major industries, and the seasonally adjusted

indexes thus obtained are weighted by the relative importance of the industrial groups in 1929 in order to arrive at the seasonally adjusted index of employees' compensation. In order to obtain the seasonally corrected index of total income payments, the adjusted index of salaries and wages is in turn weighted by the relative importance of this type of income to total income in 1929 and added to the similarly weighted adjusted indexes for dividends and interest and for entrepreneurial income. In the case of entrepreneurial income, the net income of farm operators is the only component which need be corrected for seasonal fluctuations, as the other components were assumed to show no seasonal fluctuations (cf. under "Entrepreneurial income").

As noted above, relief payments, benefits, and related items are not corrected for seasonal variation. For those items (direct relief and other labor income) which run back to 1929, the unadjusted indexes were weighted and added to the cumulative total obtained above. For those items (work relief, agricultural benefits, and adjusted service payments) which were not present in 1929, the same effect is obtained by expressing them as a relative of the average of total income payments in 1929 and adding to indexes for salaries and wages, entrepreneurial income, and dividends and interest. Work-relief payments are included in the adjusted index of salaries and wages as well as in total income.

Except in the case of dividends and interest, the ratio-to-moving-average is the general method employed in correcting for seasonal influences. For all industrial groups, it was considered desirable to work out two independent sets of factors, one for the period 1929-33, the other for the period 1934 to date. The method of correction adopted for dividends and interest yielded no usable seasonal factors (cf. discussion under dividends).

SOURCES AND METHODS FOR SPECIFIC ITEMS

SALARIES AND WAGES

Estimates for this type of income are based primarily on the monthly pay-roll indexes of the Bureau of Labor Statistics. For the most part, these indexes have proved rather satisfactory in reflecting changes in pay rolls when checked by the various industrial censuses. It should be noted that the Bureau of Labor Statistics indexes are based on reports referring to typical pay periods within the month, generally the pay period ending nearest the 15th of the month. Therefore, they do not reflect total pay rolls for the month, but rather a rate of flow of wages for a week in the early or middle part of the month.² Therefore, these indexes are not affected by the length of the month or by the number of Saturdays or pay periods occurring within the month.

In the process of adjusting these indexes to annual wages, the total pay roll for the year was allocated according to the rates of pay indicated for each month. Where wages are paid only for time actually worked there is a possible source of error in this practice. Since the weekly pay-roll periods in question may and anywhere between the 12th and the 18th of the month, this period will in certain years include such holidays as Labor Day, Armistice Day, and in certain States Lincoln's Birthday and the Election Day holiday. In such years the estimated rate of pay for the month affected will be lower than the true rate, in some industries perhaps one-sixth lower. If these holidays were included in the pay-roll period each year, the process of adjustment for seasonal variation would eliminate this seasonal factor from the adjusted index. But since most of these holidays may in some years fall within the pay period, and in other years outside it, there remains a residuum of error even in the seasonally corrected index. Any errors introduced by holidays, strikes, or other factors, are not, however, cumulative in nature, but are automatically corrected for the succeeding month.

The industries for which the Bureau of Labor Statistics monthly pay-roll indexes are currently used are the following:

Manufacturing, wages only.
Mining, wages only.
Street railways.
Telephone and telegraph.
Electric light, power, and gas.
Insurance.

Brokerage.
Wholesale and retail trade.
Year-round hotels.
Laundry and dry-cleaning establishments.

² For some industries, notably mining, pay rolls are made up on a semi-monthly basis so that the pay-roll indexes cover pay rolls for the first 15 days of the month.

For the most part, these indexes are available back to 1929, but in some minor instances it was necessary to resort to extrapolation for the early years. In the aggregate the industries covered by the Bureau of Labor Statistics pay-roll indexes account for approximately 47 percent of all salaries and wages paid in 1938.

In addition to the Bureau of Labor Statistics data, official reports of pay rolls on a current basis are available for several other important industries, including the executive, legislative, judicial, and military services of the Federal Government, the majority of steam railways, the various forms of work relief, and for those banks which are members of the Federal Reserve System. In the aggregate these reports covered an additional 16 percent of all salaries and wages in 1938. In addition, as noted below, information of this character will soon be available for the pay rolls of State and local governments.

For another large group of industries, information of a less satisfactory character is available. In recent years State departments of labor and industry have been collecting statistics relating to pay rolls in an increasing number of industries. For other industries, information relating to production or shipments can be taken as indicative of current changes in employment and pay rolls in particular lines of industry. Industries susceptible to this type of treatment account for a further 17 percent of total wages and salaries.

There remains about 30 percent of all salaries and wages for which no current information is available. This group includes, however, several important industries, such as education, which are subject to very small changes from year to year, but contains in addition several large industries, mostly of the service group, which experience definite cyclical fluctuations. The method used to estimate month-to-month changes in this area is indicated below.

In the following discussion describing the particular method used to estimate month-to-month changes in the salaries and wages for each industry, no reference will be made to those industries for which the Bureau of Labor Statistics collects current information, since the Basis method, discussed above, was used in each instance.

AGRICULTURAL WAGES

The basic material on employment and wage rates in agriculture is taken from pages 8 to 11 of the January 1939 issue of *Crops and Markets*. The product of hired labor and the weighted average wage rate is adjusted to the annual totals. The necessary adjustments are usually very small. Employment and wage-rate figures for the first of each month are assumed to apply to that month. Since wage-rate data are compiled only on a quarterly basis it is necessary to estimate wage rates for the other 8 months. For this purpose indexes of seasonal variation were computed for the months of January, April, July, and October. It was observed that the seasonal fluctuations in wage rates roughly paralleled the seasonal variations in employment. (Seasonal variation in agricultural employment from p. 17 of *Trends in Employment in Agriculture 1909-1936*—W. P. A.) Seasonal indexes of wage rates for the other 8 months were, therefore, graphically interpolated by comparison with the seasonal indexes of employment for those months. Nonseasonal fluctuations in wage rates are interpolated by a straight-line method. In making the current estimates, it is usually necessary to estimate wage rates 1 or 2 months in advance of their compilation by the Bureau of Agricultural Economics. For this purpose the main reliance is upon the seasonal index, but in times of substantial nonseasonal fluctuations in agricultural employment a roughly determined cyclical pattern is applied.

MANUFACTURING SALARIES

Several attempts have been made to construct a satisfactory indicator of changes in this important source of income (salaries in manufacturing constituted nearly 8 percent of total salaries and wages in 1938). However, because of the dearth of source material, the present series is projected largely on the basis of the relationships that are observed to hold between salaries and wages in this industry over the past 10 years. In distributing the annual totals for the period 1929-38, some help was obtained from an index of clerical salaries in Wisconsin factories (recently discontinued). Some assistance was also rendered by a semiannual index of clerical salaries in manufacturing industries compiled by the Bureau of Labor Statistics for the years 1935-38, but as yet unpublished.

Both series suffer from the limitation that they apply exclusively to clerical employees, who represent only about one-third of the total salaries in manufac-

turing. In addition, the New York State Department of Labor publishes an annual study of the earnings of office workers employed in New York State factories. This tabulation has the advantage that it covers supervisory and technical as well as clerical employees, but its usefulness is limited by the fact that it refers to only 1 month (October) of each year. Nevertheless, it does serve as a useful check on the estimated trend in manufacturing establishments during the earlier part of the years.

The Pennsylvania Department of Labor and Industry has in recent months been publishing estimates of employment and weekly pay rolls of salaried workers in manufacturing establishments in that State. While this series is of too recent origin to be of value for historical purposes, it is expected that it will in the future be of considerable value in estimating current changes in this field.

At present it is assumed that there is no seasonal variation in salaries in the manufacturing industry. An instance of the relative seasonal stability in salaries as compared with wages for an extreme case is given by a study of the Ohio Unemployment Compensation Commission which indicated that the employment of office and inside sales workers in Ohio canning establishments varied from 85.3 to 130.7 of the annual average, while the employment of all employees varied from 45.4 to 848.2 of the average. Inasmuch as the extremes in the seasonal variations for total manufacturing wages are within 5 percent of the year's average, the seasonal variation in aggregate salaries may be assumed to be very slight.

Using all this information, it was concluded that, in general, salaries follow the trend of wages after seasonal correction, with a somewhat smaller amplitude of the cyclical swings. There is also a tendency for salaries to lag behind wages, but the relationship is not sufficiently definite to be taken into account in determining current changes in manufacturing salaries. It appears that in recent years salaries have become more responsive to current business trends and in this respect parallel more closely the month-to-month changes in wages.

MINING SALARIES

As in manufacturing, monthly salaries in this industry are based largely on changes in the seasonally corrected index of wages.

CONSTRUCTION

The Bureau of Labor Statistics publishes a monthly pay-roll index, which, however, is not sufficiently complete for the purposes of this series, since it covers only building construction and excludes road building and other types of engineering projects. In addition to the monthly index, the Bureau of Labor Statistics estimates monthly employment in all contract construction in connection with its monthly employment aggregates. This estimate, together with the Labor Department's index of average pay in building construction, is used to distribute annual pay rolls as estimated by the Department of Commerce, and also to project these estimates on a current basis.

STEAM RAILWAYS, PULLMAN AND EXPRESS

The compensation of employees of class I railways are reported monthly to the Interstate Commerce Commission. These monthly reports are adjusted to the total of employees' compensation for all railways as shown in the annual publication entitled, "Statistics of Railways." The pay rolls of the railway express system and the Pullman Co. have been reported monthly to the Interstate Commerce Commission since 1934. Prior to 1934 the monthly break-down for these companies is based on revenue statistics. It should be noted that the railway companies report to the Interstate Commerce Commission the wages paid out during the calendar month. This is the only industry, therefore, in which a correction should be made for the number of working days in the month. Actually, the refinement to be effected did not seem to justify the labor involved, and no correction was attempted.

The Interstate Commerce Commission's figures are not made available in time to be included in the estimates for the latest month. As a rough expedient, the adjusted index of railway employment is assumed to represent the cyclical change in compensation. The change in the employment index is then corrected to give effect to the ordinary seasonal fluctuations in compensation. The corrected percentage change is then applied to the compensation of railway, Pullman, and express employees for the preceding month.

MOTOR TRUCKING

Current information relating to pay rolls in the motor-trucking industry are confined to three series: (1) an index of wages for identical reporting firms classified as "Motor freight, docks and warehouses" by the Pennsylvania Department of Labor and Industry; (2) a similar index for the "Teaming, Trucking, and Handling Industries" in Massachusetts; (3) an index of commodity movements by motor truck prepared by the American Trucking Association. The value of the two pay-roll series is impaired by the fact that neither index covers the "motor trucking" industry alone. The Pennsylvania Department of Labor and Industry's index shows very wide fluctuations over the past few years, whereas the Massachusetts index has been very stable. The American Trucking Association's index refers largely to interstate trucking and shows wider seasonal and cyclical fluctuations than would be expected of a more comprehensive index. An additional limitation upon this index is its availability only since January 1937. From that date, pay-roll changes in the motor trucking industry have been based on the three indexes. The indexes are plotted on a single chart and a composite index estimated graphically by a rough weighting of the changes in the several indexes.

For the period 1932 to 1936 the two State indexes form the basis of the monthly break-down. For the period 1929 to 1931, the month-to-month changes are based on monthly fluctuations in miscellaneous and l. c. l. carloadings, because in Massachusetts such loadings were found to correlate closely with the pay-roll index for the years 1932 to 1937.

MOTOR BUSES

The motor-bus industry is relatively limited in scope and magnitude, excluding as it does motor busses operated by electric railways or subsidiaries or their successor companies. These latter are covered in the Bureau of Labor Statistics pay-roll index for street railways. For estimating the month-to-month trend in pay rolls of independent bus companies, some weight is given to the pay-roll index prepared by the Massachusetts Department of Labor, covering 90 percent of the industry in that State. Some weight is also given to the volume of passenger traffic on steam railways with special allowance for those periods in recent years when changes in passenger rates have presumably influenced the competitive position of the railroads.

STORAGE

The month-to-month changes in pay rolls in the storage industry are estimated by applying an index of seasonal variation to a smooth curve connecting the annual averages. The index of seasonal variation is constructed from monthly pay-roll data in the 1935 Census. As the revenue from the storage of agricultural products constitute a substantial part of the revenue of this industry, some weight is given to crop movements in constructing the curve. For current months, the smooth curve is simply carried forward by reference to similar periods in the past, with special weight given to the movement of crops.

WATER TRANSPORTATION

Pay-roll estimates in the field of water transportation are of necessity based on statistics relating to the monthly movement of freight by water. The only useful series available are: (1) Volume of freight moving through the Sault Sainte Marie; this series is believed to be a fairly good indicator of freight movements and to a lesser extent of wages on the Great Lakes. (2) Ship clearances of American vessels in foreign trade, which give some indication of wages of personnel on United States vessels engaged in foreign commerce. (3) Movement of freight through the Panama Canal in United States vessels—largely composed of inter-coastal traffic but, of course, including some traffic from the east coast to the Orient or to the western coast of South America and some traffic between west coast and Europe, which, to this extent, is a duplication with (2). (4) Ship clearances in foreign trade (United States and other vessels), which should provide a rough measure of the wages of stevedores in boarding such freight. (5) The War Department publishes monthly figures on freight movements on the Ohio, Allegheny, and Monongahela Rivers, but these series are not indicative of anything except traffic in the Pittsburgh district and should be weighted accordingly.

The principal deficiency is that there is no current index of freight movements in coastwise trade which is the most important of all types of water traffic. In order to give some effect to the available indexes of current freight movements, a weighted index was constructed from the five component series listed above for the period 1929 to 1935. In 1929, the salaries and wages of the labor involved in the handling and movement of the traffic reflected in this index is believed to have represented about 60 percent of the total salaries and wages in the water-transportation industry as a whole. The residual 40 percent roughly measures the salaries and wages of persons employed in coastwise movement of freight, including the stevedoring necessary to load and unload such freight. The month-to-month changes in this volume of income were based on the movement of freight by rail. The combined index is then adjusted to the annual totals for each year. In general, the index works fairly well for the period 1929-36 but has a downward bias in recent years. The divergence is probably to be explained by the growth of coastwise waterway traffic relative to railway traffic over the later period.

The Research Division of the United States Maritime Commission is now compiling information relating to employment and pay rolls in water-borne traffic. Therefore, reliable indexes will soon be available for these industries on a current basis, but for historical purposes it is still necessary to rely on traffic statistics.

BANKING

Bureau of Labor Statistics indexes are available for the period 1932-35. In 1936, the Bureau of Labor Statistics discontinued this series on the advice of the Central Statistical Board to the effect that fluctuations in employment and pay rolls were too small to justify the collection of current information. In addition, the Federal Reserve Board compiles data on a semiannual basis for all member banks. For the years 1932 to 1935, inclusive, the Bureau of Labor Statistics series was adjusted to the annual estimates for all banks exclusive of building and loan associations (included with miscellaneous in monthly estimates) and brokerage (estimated separately). For the years 1929 to 1931, inclusive, the Federal Reserve figures were used. The Reserve figures showed a consistent seasonal rise during the latter half of the year, which, by comparison with pay-roll estimates for the Pittsburgh banks, was concluded to represent bonuses and payments for overtime during the month of December. Therefore, a smooth curve was fitted to the Reserve data for the first half of the years 1928-32, inclusive, to get the trend exclusive of such "bonuses." The monthly movement in salaries was calculated from this curve, and the computed deficiencies for the latter half of each year were added to the calculated December figure. These monthly data for member banks were then adjusted to the annual estimates for all banks. For current information, it is necessary to rely upon the Reserve Board's semiannual reports and upon pay-roll indexes published by the Massachusetts Department of Labor and Industries and by the University of Pittsburgh (this index covers banks in western Pennsylvania). None of these sources in banking salaries have been very mild in the years following the liquidation of the early 30's.

BROKERAGE

Month-to-month changes in pay rolls in the brokerage business have been published by the Bureau of Labor Statistics since January 1932. For the years 1929 to 1931, monthly pay rolls were estimated by the graphical comparison of pay rolls for the period 1932-39, with the volume of stocks traded each month on the New York Stock Exchange. The general relationship noted for these years is projected for the earlier years.

INSURANCE

The Bureau of Labor Statistics monthly pay-roll index is available since January 1932. For the years 1932 to 1938 this index was, therefore, adjusted to the annual estimates for these years. For the years 1929 to 1931, a smooth curve was fitted to the annual data for 1929-32. The monthly series thus obtained was linked to the January 1932 figure for the adjusted Bureau of Labor Statistics index and then converted backwards to the annual estimates.

REAL ESTATE

The monthly income of employees in real-estate enterprises is estimated on the basis of a monthly index of real-estate activity published in the Real Estate Analyst. This procedure is justified by the circumstance that pay rolls in this industry represent largely commissions which depend primarily on the volume of real-estate activity. At any rate, the monthly pay-roll estimates may be expected to predict, with a fair degree of accuracy, changes in the annual aggregate, since this is also based largely on the series appearing in the Real Estate Analyst.

LAUNDRIES AND DYEING AND CLEANING ESTABLISHMENTS

The Bureau of Labor Statistics' indexes for these two industries exclude clerical and technical employees; wherefore, salaried employees in these industries are included with "miscellaneous" employees. The coverage is 27 percent for dyeing and cleaning and 30 percent for laundries. For the years 1931 to date, the monthly indexes are adjusted annually to our estimates. For the years 1929 to 1930, the estimates are based on the employment estimates of the Committee for Economic Security.

YEAR-ROUND HOTELS

WAGES AND SUBSISTENCE

The Bureau of Labor Statistics' index covers 50 percent of the industry, including both salaried and wage personnel. The index is based upon cash payments only. It has been corrected to the 1933 Census, as have the annual estimates, but, owing to the inclusion of subsistence in the latter, the percentage change from 1929 to 1933 is not the same. However, the discrepancy was so small that the month-to-month fluctuation in the Bureau of Labor Statistics' Index was simply applied to the more inclusive dollar figures.

GRATUITIES

In the annual income estimates gratuities are estimated as a percentage of the hotel expenditures of guests. In computing the monthly income of employees from this source, the Horwath & Horwath figures covering room rentals and hotel restaurant sales were weighted according to the relative importance of each as shown by the Census of 1935, and the resulting composite index adjusted to the annual estimates of gratuities received by hotel employees.

SEASONAL HOTELS

The Censuses of 1933 and 1935 yielded an index of seasonal variation of employment in each of these years. It was assumed that the seasonal variations in pay rolls followed the same pattern, and the seasonal factors for 1933 were applied to the annual wages for 1932 and 1933, the 1935 seasonal to all other years on the assumption that the 1933 seasonal was typical of the worst years of the depression, the 1935 seasonal of relatively better years. The cyclical changes in this series are estimated currently on the basis of pay rolls of year-round hotels and the trend in certain luxury expenditures: for example, Pullman traffic.

RESTAURANTS AND DRINKING PLACES

PAY ROLLS

Several States are now collecting and publishing pay-roll indexes for restaurants. Massachusetts has been publishing such figures since September 1931; Kansas since August 1932; New York State, November 1932; Maryland, January 1934; Illinois, July 1935; Wisconsin, August 1937, and Minnesota since 1938. These State indexes were weighted according to their importance in the Censuses of 1933 and 1935 and a chain index was constructed to cover the period 1932 to date. For most of 1932 the index reflects merely changes in the Massachusetts index, but becomes more comprehensive and more reliable as new States have been added. The 7 States now represented in the index accounted for more than 40 percent of the salaries and wages in restaurants in 1935, so that, assuming 50 percent coverage, within each of the reporting States, the index may be assumed to be based on reports from 20 percent of the industry. None of the State indexes

is believed to cover drinking places, so these are estimated separately for the period 1933 to 1935. With 1935 as a base the index is adjusted to the annual dollar pay rolls back to 1932. Estimated pay rolls in drinking places (cf. below) are added for the years 1933 to 1935. For the period 1929 to 1931 a smooth curve was drawn through the annual estimates and seasonally adjusted figures read from the curve. The seasonal factors calculated from the index for the period 1933 to 1935 were applied to this curve. When drinking places had been added to restaurants for 1935, the restaurant index was linked at December of that year and adjusted to the annual data for restaurants and drinking places for the years 1935 to 1938, on the assumption that after 1935 restaurant pay rolls reflected also pay rolls in drinking places. The separate treatment of drinking places between 1933 and 1935 is necessary because of the unusual changes following the repeal of the prohibition amendment.

Since the "drinking places" industry grew very rapidly after the repeal of prohibition in 1933, it was considered desirable for purposes of historical accuracy to estimate pay rolls separately for the years 1933 to 1935. Monthly fluctuations in employment are given in the Censuses of 1933 and 1935, and are employed in estimating monthly labor income for those years. The census figures, however, are of no value as indicating the cyclical or seasonal character of fluctuations in employment, inasmuch as the dominant influence during these years was the successive legalization of liquor in the various States. In each year there was a marked rise in employment during the months April to July and a slow rise thereafter, presumably the effect of legislative activity during the early months of the year. For the year 1934, the same characteristic rise was assumed; for later years it is assumed that this influence has diminished in importance and that any further changes have been largely of a cyclical character. Hence the combination of this item with restaurants after 1935.

GRATUITIES

In the annual estimates these are taken to represent 10 percent of restaurant sales. Therefore it is only necessary to construct an index of restaurant sales. For this purpose the Marketing Research Division's index of restaurant sales and the chain-restaurant sales carried in the Survey of Current Business until recently (Childs and Waldorf still available though not published) were used. A composite index was built up by giving chains and independents equal weight—this only for the period beginning January 1937, because the Marketing Research Division's information is not available before that date. A seasonal was then computed for this period and applied to data read from a smooth curve drawn through annual data for restaurants only for the period 1929-35. For the years 1935 to 1938 it was necessary to add the sales of drinking places (cf. pay rolls). The growth in pay rolls of drinking places over this period was assumed to be similar to the growth in pay rolls. For the period 1935 to date the same procedure was adopted as in the case of pay rolls, but, since the index was not available for 1936, recourse was had to a smooth curve drawn through annual data for restaurants and drinking places. The seasonal factors computed above were also applied before adjustment to the annual data.

INCOME IN KIND (MEALS)

Pay rolls are used as a trend and adjusted to the annual estimates of income in kind. The adjustment is a rough one; the ratio of actual annual estimates to annual figures as given by the pay-roll trend is calculated for each year, and this ratio is assumed to vary continuously within each year. The ratio for each month as determined by inspection is multiplied by the trend as calculated above.

DOMESTIC SERVICE

As in the case of the annual estimates of the number of domestic servants, the monthly fluctuations in domestic-service employment are those estimated by the Committee for Economic Security. Monthly rates of pay are then calculated by drawing a smooth freehand curve through the average monthly wage for each year. The product of these two series yields the monthly income of domestic servants. In the original compilation, the estimates were carried forward on the basis of employment alone, but the resulting annual figure for 1937 was so far below the actual total that it was considered desirable to extrapolate wage rates

also, and this is now being done. Employment estimates are a composite of estimates of employment in manufacturing, trade, etc.

PRIVATE EDUCATION

Estimates in the field of private education are largely a matter of determining the monthly distribution of the annual salaries and estimating very roughly, on the basis of the general movement of total income payments, the percentage change of the current year over the preceding year. Year-to-year variations are slight. The method of determining the monthly distribution is a variation of that used for public education (q. v.).

OTHER INDUSTRIES

Included in this catch-all group are the following items: building and loan associations and miscellaneous industries of the finance group; the bulk of the industries classified as service industries in the annual estimates, including the employees of independent professional practitioners; and finally, the industries grouped under "miscellaneous" in the annual estimates. These combined industries accounted for \$6,145,000,000 in 1929, or 12 percent of the total compensation of employees in that year. Inasmuch as the larger part of these industries are engaged in the production of services the demand for which does not vary significantly from one month of the year to another, it was assumed that there were no seasonal variations in employment and pay rolls in this group of industries. By experiment, it was found that the pay-roll series for the distributive industries gave a fairly good fit to the annual estimates of this miscellaneous group, and therefore the seasonally adjusted index of labor income in the distributive group was applied to the 1929 total for these industries. The adjustments necessary to bring the annual totals thus obtained into line with the estimated annual totals are indicated below: 1930, +0.6; 1931, +1.5; 1932, +2.8; 1933, +1.2; 1934, +0.5; 1935, -1.3; 1936, -0.2; 1937, +0.6; 1938, +0.5.

It is evident that these industries are subject to somewhat smaller cyclical fluctuations than is the distributive group, and allowance must be made for this difference in periods of rapid changes in activity.

GOVERNMENT: GENERAL CONSIDERATIONS

The total salaries and wages of governmental units as included in this series will not be found to be identical with that presented in the annual income estimates, for two reasons: (1) Retirement contributions of governmental employees have been deducted in the monthly series; and (2) certain types of compensation representing a reward for part-time services have been classified in the annual estimates with other labor income in order that salaries and wages may be comparable with the number of employees. Since the number of employed persons is not estimated in connection with the monthly series, such types of income have for convenience been included with salaries and wages.

FEDERAL GOVERNMENT

CIVIL EXECUTIVE OTHER THAN POSTAL SERVICE

Payroll statistics are available only since November 1933. Prior to that date, it is necessary to rely upon midmonth employment figures multiplied by monthly estimates of average pay. These monthly estimates of average pay are constructed by drawing a smooth curve through the fiscal year averages with correction for the legislative changes in the rates of pay in July 1932 and April 1933. The monthly pay-roll estimates were then adjusted to the fiscal-year totals, but inasmuch as the necessary adjustments were small, an arbitrary smoothing method was employed.

POSTAL SERVICE

The same method was used except that it was necessary to make some provision for the large sums paid out to temporary employees during the Christmas season, inasmuch as these employees would not be included in the midmonth employment totals. As was found to be the case in recent years, these additional payments were assumed to be closely related to the expansion in department store sales during the month. The monthly estimates so obtained were adjusted

to the fiscal-year totals by an arbitrary smoothing method. The necessary adjustments were small in every case.

MILITARY, LEGISLATIVE, AND JUDICIAL

Subsequent to November 1933, payments to employees in these branches of the Federal Government are reported monthly to the Bureau of Labor Statistics. Prior to that date a smooth curve was drawn through the fiscal-year averages.

ADJUSTMENTS FOR RETIREMENT SYSTEMS

The annual congressional appropriations on account of the Civil Service Retirement which are included in national income have been dropped from this series. Similarly, employee contributions to the retirement fund have been deducted from the salaries of executive employees. Employee contributions to the fund are available only on a fiscal-year basis, so that it is necessary to calculate such payments as a proportion of salaries for each year and apply this proportion to the individual months. On a current basis, deductions are estimated by applying the average for the latest fiscal year available to salaries paid out during the current month.

Similarly, the contributions of States and local governmental units to their own retirement funds have been excluded from the monthly series, and the employee contribution deducted from salaries, and wages. Since contributions are available only on an annual basis, a procedure similar to that used for Federal employees is adopted.

STATE AND LOCAL GOVERNMENTS

PUBLIC EDUCATION

As there is no current measure of cyclical changes in teacher's salaries, the chief problem here was to allocate the annual figures on a monthly basis. For this purpose, the source used was the March 1932 Research Bulletin of the National Education Association. Table 11 in that bulletin gives, for cities with population greater than 2,500, the number of months over which teachers' salary payments extend by size of cities. The cities in each size group were then weighted by their pay roll for the year 1931-32 (cf. p. 35 of Statistics of City School Systems for 1931-32, U. S. Office of Education), and there was thus obtained the percentage of annual teachers' salaries that extended over 8, 9, 10, 11, and 12 months. Where salaries were paid during 11 months, it was assumed that August was the month during which no payments were made; for 10 months, July and August; for 9 months, July to September; for 8 months, June to September. On these assumptions a monthly distribution of all teachers' salaries was computed which indicated a constant rate for October to May, with a reduced rate for June and July and very low rates for August and September. When corrected for seasonal variation, this series would show an increase or decrease in October of each year and a constant rate over the following 11 months. This annual change is determined on the basis of the rough estimates of informed workers in this field.

The method assumes that salary changes are effected only at the beginning of the school year. While this may be the general practice, it was certainly not maintained during the depression years, when many local governments were forced to retrench whenever possible. On the other hand, such salary cuts often took the form of a more or less voluntary return of part of the teachers' salary and in such cases the salaries reported by local governments might not necessarily be reduced. Therefore, no attempt was made to account for changes in personnel or salaries within the school year. In recent years the year-to-year changes in the volume of teachers' salaries have been small.

STATE AND LOCAL CONSTRUCTION

The monthly estimate of salaries and wages on public construction are based on a confidential estimate of monthly employment by the Bureau of Labor Statistics. To these employment estimates is applied the average compensation for this type of work computed from employment and pay-roll statistics that the Bureau of

* Where teachers are paid on a monthly basis, at least some of these payments might be made at the end of June. It was assumed, however, that even in such cases the payment was more reasonably allocated to the following month during which, presumably, it was first available for expenditure.

Labor Statistics has been collecting from a small number of State and local governments during recent years. As the average compensation showed little variation over these years, the same average was used for all the years 1929-39.

OTHER STATE AND LOCAL GOVERNMENT PAY

By the method outlined above, annual estimates were obtained of the compensation of public employees on construction projects, which constitute the most variable of the functions performed by local governments. These annual estimates are then subtracted from the annual estimates of total compensation of State and local government employees, exclusive of public education, and a smooth curve drawn through the annual averages. The result is a much smoother curve than could have been drawn if construction were not deducted, and there can be less hesitation in extrapolating the curve in the current period.

Since January 1940 the Bureau of the Census has been collecting quarterly information on the employment and pay rolls of State governments and municipalities. It is hoped that this material will be very helpful in improving the estimates of the current income of governmental employees. Similar material for the years 1929 to 1939 will soon be made available by the Bureau of Labor Statistics.

WORK RELIEF

This type of income since 1933 includes relief and nonrelief earnings on work relief and administrative projects under the Federal Emergency Relief Administration; earnings on the Civil Works program of the winter months of 1933-34; and the income of enrolled personnel in the Civilian Conservation Corps (the salaries of nonenrolled personnel being included for the most part in the pay rolls of other governmental agencies) and the income of employees on Work Projects. Monthly data have been supplied by the Work Projects Administration and, inasmuch as these monthly figures are aggregated to give the totals appearing in the national income estimates, no adjustment is necessary. The present series also includes an estimate of work-relief wages for the years 1930 to 1932. This type of income became of increasing importance during 1932, and therefore, in order to prevent a sharp discontinuity in the work-relief and employees' income series in January 1933, work-relief wages have been roughly estimated for the years 1930-32. The resulting estimates for work and direct relief are less reliable than that for their aggregate, but any resulting bias is not carried into the total-income-payments series. For the method used to arrive at this estimate, see under "Direct relief."

ENTREPRENEURIAL INCOME AND NET RENTS AND ROYALTIES

NET INCOME OF FARM OPERATORS

This item represents the most important component of entrepreneurial income—both because of its magnitude, averaging as it does one-third of total entrepreneurial income as here defined, and because of its variability. Thus, in 1932 agricultural net income was 70 percent lower than in 1929, whereas all other entrepreneurial incomes showed in the aggregate a decline of only 30 percent for the same period. The net income of farm operators has in recent years been composed of two elements: (1) the net income arising from the production and sale of farm products, and (2) Government benefit payments. The former item is computed by deduction of estimated costs from gross income. The latter item is carried in its entirety to net income.

For estimating agricultural net income on a monthly basis, the Agriculture Department's estimates of cash income from farm marketings is used. The Department of Agriculture's unadjusted dollar series is then adjusted to the annual estimates (exclusive of Government benefits) of the net income of farm operators, which include the value of farm products consumed on the farm. The net-income figures are naturally more variable from a cyclical standpoint than are the gross-income figures, cost items being relatively more stable. Consequently, in projecting this series into the current period, account is taken of this tendency in accordance with the observed relative movements in gross and net income for similar points in the cyclical trends of the past 10 years. To the monthly net-income figure as thus obtained is added the governmental benefits received by farmers.

In correcting farm income for seasonal fluctuations, a single set of factors is computed for the period 1929-37. Farm benefits are not adjusted for seasonal influences. The seasonal factors thus computed are not entirely satisfactory, and even after correction the agricultural-income figures show marked month-to-month fluctuations which are communicated in reduced measure to the index of total income payments.

The index of nonagricultural income, therefore, serves the important function of abstracting these random fluctuations and of presenting the nonseasonal changes in the more stable forms of income. In computing nonagricultural income, the items deducted are: Agricultural net income (as defined above), agricultural wages, and interest and net rents arising from farm property. It should be noted that a substantial volume of these latter two types of income are received by persons not living on farms, particularly those receiving mortgage interest. On the other hand, farm incomes are supplemented by part-time earnings in industry, by an unknown volume of nonfarm property income, and by a small amount of direct relief, including emergency subsistence payments. Consequently, the nonagricultural-income series represents income payments arising from nonagricultural activities, rather than income received by the nonfarm population.

The difference between total income payments and nonagricultural income payments will not, however, be found to be identical with income produced as incorporated in the annual income estimates. This divergence is accounted for by the circumstance that agricultural net rents are in the annual aggregates included in the finance group along with net rents and royalties on nonfarm property.

OTHER ENTREPRENEURIAL INCOME

As noted in the body of this report, this item represents largely withdrawals rather than income in the accepted sense—save in the important case of independent professional men, for whom, because of the small scale of capital involved, it is impractical to distinguish net income from personal withdrawals even on an annual basis. Information relative to the month-to-month fluctuations in this type of income is entirely lacking on either a historical or a current basis. Therefore it is necessary to assume that withdrawals are not subject to seasonal influences and, in projecting the estimates, to base such projections on the study of past performance with special reference to the seasonally corrected indexes of salaries and wages in the distributive and service industries. The resulting series is relatively insensitive to fluctuations in economic activity. If this result fails to accord with the common conception of the entrepreneur as the bearer of risk, it is none the less reasonable to assume that, for entrepreneurs as for other persons, expenditures can be expected to be substantially more stable than income. And since the personal expenditures of entrepreneurs determine largely his business withdrawals, these latter may also be expected to show a certain degree of stability. At any rate, the monthly series has so far predicted with fair accuracy the changes in entrepreneurial withdrawals as entered in the annual income estimates.

NET RENTS AND ROYALTIES

Rents and royalties, as included in the national-income estimates as well as in the present series, represent the net return from the ownership and operation of rented property, after the deduction of various cost items. Therefore this item is more properly classified with entrepreneurial income rather than with property incomes (dividends and interest) in the narrower sense of that term. An additional reason for combining this item with entrepreneurial income lies in the paucity of data available for both items; in contrast it is felt that the trend in dividends and interest can be determined with a fair degree of accuracy.

As in the case of "other entrepreneurial income" the treatment of this item is limited to an attempt to determine trend and cyclical influences from the annual data. In projecting the annual data into the current period some assistance is rendered by the Bureau of Labor Statistics index of housing costs and by the housing component of the National Industrial Conference Board's index of living costs. Both indexes must, however, be considered of very limited value for this purpose—first, because residential rents account for only 50 percent of all net rents and royalties; secondly, because both indexes can at best be taken as reflecting gross income from residential rents, whereas what is desired is some measure of net income from such sources. Net rents and royalties show much wider

fluctuations than other entrepreneurial income as included in the present series. The principal reason for this is that rents and royalties include an element of business savings. However, because of the small size of the rents item, as well as the great difficulties involved in estimating withdrawals for those persons receiving such incomes, no attempt has been made to eliminate this element from the monthly income estimates.

DIVIDENDS AND INTEREST

Dividends are estimated largely on the basis of the series of dividend payments compiled by the New York Journal of Commerce, supplemented by special studies for critical periods (as when the Journal of Commerce series was radically altered in 1934). The Journal of Commerce series was selected because it comprises actual payments to shareholders during the current month, rather than dividend declarations as measured by the New York Times series, and is for that reason more comparable, in respect to timing, with the estimates of labor income.

Interest payments on corporate and governmental indebtedness are also estimated to a large extent, especially in the earlier years, on the Journal of Commerce series. For the years 1929 to 1935, the Journal of Commerce series is adjusted to the annual estimates of long-term interest for corporate and governmental bodies. Despite the relatively stable nature of the series, the adjustments for these years are surprisingly large. Beginning with 1936, interest payments by the Federal Government are taken directly from the Daily Treasury Statements, and the trend of interest payments on other corporate debt is determined on the basis of special studies of issues, retirements, and refunding operations in the security markets. Seasonal fluctuations are still based upon the Journal of Commerce series. For all years, interest payments on farm and urban home mortgages and on the indebtedness of unincorporated enterprises are assumed to have no seasonal fluctuations and are, therefore, estimated by drawing a smooth curve through the annual estimates and extrapolating this curve forward on the basis of fragmentary information on changes in the volume of mortgages and interest rates on such mortgages.

It is a matter of some difficulty to correct dividend and interest payments for seasonal variation, and so far none of the orthodox methods has been found to be applicable. The principal difficulty lies in the fact that, although there is a definite seasonal pattern for dividends, the pattern is subject to rapid changes which seem to be cumulative in nature. An index of seasonal variation for dividends has been calculated by the ratio-to-moving-average method for three periods, and these indexes are compared below:

Indexes of Seasonal Variation for Dividends

Month	1929-31	1932-34	1935-37	Month	1929-31	1932-34	1935-37
January.....	161	197	100	July.....	131	135	108
February.....	89	68	44	August.....	75	73	49
March.....	97	83	76	September.....	78	85	100
April.....	87	87	121	October.....	96	126	111
May.....	93	79	39	November.....	86	75	41
June.....	137	101	123	December.....	86	78	308

As might be concluded from a comparison of the seasonal factors for 1929-31 and 1932-34, it would have been possible to correct dividends for seasonal variations over the years 1929-35 by computing a seasonal factor every year from the variations for the latest 3 years, and such a method does give a fairly smooth curve, which, however, still exhibits random fluctuations such as are not observable in seasonally corrected employees' compensation. But at any rate, this method would not be applicable to the later years during which the undistributed-profits tax was in force. As a matter of fact, dividends could hardly have been said to have a true seasonal pattern during this period. This tax, as already remarked, imposed a penalty upon corporations not paying dividends in the years in which they were earned. Therefore, insofar as a full year's operation proved to be more profitable than had been expected in the earlier months of the year, there would tend to be large dividend payments in the final month of the year. Insofar as operations for the year as a whole did not come up to earlier expectations, there might well be a tendency for dividends to fall off at the year end. Thus, in 1938

when business activity experienced a sharp rise during the last half of the year, December dividends accounted for nearly 30 percent of all dividends disbursed during the year. On the other hand, the closing months of the year 1937 were marked by a sharp drop in industrial activity, and December dividends amounted to only 22 percent of all dividends. The year 1938 was one of greatly reduced business activity, and, therefore, dividends in the final month represented only 17 percent of the year's total. The sharp rise in corporate incomes in the last quarter of 1939 was again reflected in the fact that December dividends accounted for fully 24 percent of the year's total.

There was a well-defined seasonal pattern for interest payments during the early years of the period under review, but with the inauguration of the Federal Government's refunding program, and the smaller-scale refunding operations of public-utility corporations, this seasonal pattern has fluctuated widely in recent years. Owing, therefore, to the difficulty of correlating dividends and interest for seasonal variations in recent years by the orthodox methods, it was decided to determine the nonseasonal movements for the whole period by merely computing a 18-month moving average centered on the seventh month and smoothing through this average at critical points. The results obtained by this method are satisfactory in most respects, but it is necessary to project this index forward to cover the latest 5 months. This projection is based largely on a comparison of movements in this average with movements in the adjusted index of employees' compensation for similar periods in the past. To the extent that this comparison proves faulty, it is necessary to revise the adjusted index of total income payments from time to time. While this procedure may occasion some inconvenience to those who use the series, it is to some extent justified by the fact already indicated above that the actual payments of dividends (and in some periods, interest) do not reflect current business operations, as do, for example, production indexes and pay-roll statistics, but refer rather to the earnings of some preceding period.

The construction of a smooth trend for dividends and interest, even by the use of rather arbitrary methods, is believed to be justified by the uses to which the adjusted index may be put. In its primary use as an index of consumer purchasing power, it seems desirable to minimize the effects of month-to-month changes in property incomes because (1) so much of this type of income accrues to trust accounts of various kinds and so is not immediately available for consumption, and (2) of the remainder, it is likely that the expenditure based upon this income is extended over a period of several months rather than being concentrated in the months in which the income is received (cf. similar treatment in case of entrepreneurial income). Secondly, with respect to the use of the index as an indicator of general economic activity, month-to-month fluctuations in dividends are misleading here, as they should be largely offset by changes in business savings. Thus, the high level of December dividend payments must be considered to be largely offset by negative business savings, particularly in years of depressed activity. Similarly the low rate of dividend disbursements in surrounding months is accompanied by positive business savings—that is, by an accumulation of net income to be paid out quarterly or semiannually, according to the usual dividend-paying practice.

DIRECT AND OTHER RELIEF

Included in this type of income are "general relief," "payments to recipients of special types of public assistance" (old-age assistance, aid to dependent children, and aid to the blind), and "emergency subsistence payments to farmers." The earnings of relief persons employed on work-relief projects under the F. E. R. A. have been deducted from the general relief estimates published in the Social Security Bulletin and included in the work-relief estimates; cf. table 3, "Statistical Summary of Emergency Relief Activities, January 1933 through December 1935."

Subsequent to January 1933 the relief estimates are those of the Social Security Board and the Works Progress Administration. Neither of these agencies has released relief estimates for earlier years, and therefore these were constructed in the following way.

Of primary importance were the estimates appearing in appendix B, p. 69, of Trends in Different Types of Public and Private Relief in Urban Areas, 1929-1935, Publication No. 237 of the Children's Bureau of the Department of Labor. In this appendix are given estimates of work relief, direct relief, and categorical assistance by months for the period 1929 to 1935, for 120 urban areas. For each

of these three types of relief there was constructed an index for the years before 1933 by linking the Children's Bureau estimates to the Works Progress Administration estimates for the first 4 months of 1933. (Because of the unsatisfactory nature of the estimates for the early months of 1933 this was considered a more conservative procedure than that of linking the indexes at January 1933.) By adding the monthly estimates for the three types of relief, a first estimate for all relief from 1929 to 1932 was obtained, but it was still necessary to correct this estimate for the varying trend of urban and rural relief. The only estimate available is one for 1932 (Trends in Relief Expenditures, 1910-1935, by Anne E. Geddes, p. 44). From this source, public relief was estimated at \$447,000,000 for 1932, whereas the estimate based solely on the information for 120 urban areas was \$531,000,000, indicating that the upward trend in rural relief from 1932 to 1933 was more marked than that indicated for urban relief by the Children's Bureau series. On the assumption of a similar differential trend for 1929 to 1931, the annual estimates for this period were also revised downward and the monthly estimates adjusted to these annual estimates by the Basse method.

Work-relief payments were estimated roughly on the basis of the proportions of work-relief expenditures to all other relief expenditures as estimated by the Children's Bureau for urban areas for the years prior to 1933. There is no estimate of total work-relief wages comparable to the Works Progress Administration estimate of total disbursements for 1932. Therefore the estimates of work-relief wages and direct relief must be regarded as less reliable than their estimated total for the years before 1933.

OTHER LABOR INCOME

The characteristic common to the income included here has been noted in the text of this report—in general, the disbursements included represent compensation for past services. The most important components, their relative importance, and the method of estimation are noted separately below. In general they represent the results of official tabulations, or of arbitrary smoothing of annual data.

PENSIONS TO VETERANS

Pensions to veterans constitute the largest single item for the period as a whole, and for recent years have approximated 35 million dollars a month. The monthly entries for the whole period are furnished by the United States Veterans' Administration.

ADJUSTED-SERVICE BENEFITS TO WORLD WAR VETERANS

This item is now of diminishing importance. Estimates for the years 1931 to 1937 were constructed on the basis of data supplied by the United States Veterans' Administration and the United States Treasury Department. Current figures are taken from the month-end statements of the Treasury Department.

Adjusted-service benefits constituted an important addition to income in 1931 and 1936, and for these years produced severe breaks in the otherwise fairly smooth curve of total income payments. For some purposes it would seem advisable to smooth over these discontinuities, by an arbitrary process if necessary. If the income index is considered as an index of economic activity, such benefits obviously have no place in the index; even where interest attaches to the primary or purchasing power aspect of the index, a comparison with department-store sales, or other available indexes of retail sales, indicates that the bonus payments of the summer of 1936 had little effect on retail activity in those months. Indications are that the expenditure of the \$1,200,000,000 of benefits disbursed during June and July 1936 was distributed over a period of several months preceding and following their actual disbursement. For those who may be interested in making some such

allowances, or who for other reasons may wish to eliminate adjusted-service payments from the income series, they are shown below:

Adjusted Service Benefit Payments

(In millions of dollars)

Month	1931	1932	1933	1934	1935	1936	1937	1938	1939
January		10	6	3	2	1	18	6	2
February	5	12	6	2	2	1	18	5	2
March	307	10	7	2	2	1	18	6	3
April	852	10	6	2	2		10	5	3
May	82	9	5	2	2		7	4	2
June	30	9	5	2	2	300	18	8	5
July	25	21	4	2	2	418	12	5	2
August	10	26	4	2	1	77	9	5	2
September	17	11	2	2	1	48	8	4	5
October	17	6	2	2	1	25	8	4	8
November	13	6	2	2	1	25	6	8	2
December	21	6	2	2	1	25	6	8	2

OTHER FEDERAL DISBURSEMENTS

Included here are all annuities to former civil-service employees as well as refunds to persons withdrawing from the retirement system. Also, as regards retirement benefits to military personnel, monthly data are from official sources. In the aggregate these items accounted for roughly \$85,000,000 of income in 1939.

SOCIAL SECURITY BENEFITS

Social Security benefits have been of increasing importance since 1937, when they totaled only \$40,000,000. Unemployment-insurance benefits now constitute the most important single component of "other labor income," aggregating \$435,000,000 in 1939. Railroad retirement benefits accounted for another \$100,000,000 in 1939. Disbursements under the old-age-insurance provisions of the Social Security Act amounted to only \$12,000,000 in 1939, but, consequent upon the recent liberalization of the provisions of this act, such disbursements are expected to grow in importance during 1940.

All monthly data are from official sources.

WORKMEN'S COMPENSATION, PRIVATE RETIREMENT BENEFITS, ETC.

All other labor income includes workmen's compensation, benefits under retirement systems sponsored by private industry or non-Federal governments, and a small volume of Federal Government pensions for which no monthly data are available. Because of the lack of monthly data, month-to-month changes are estimated by graphical interpolation of the annual data. In the aggregate, these items show little change from year to year.

